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Antiquity

A Quarterly Review of Archæology

Edited by O. G. S. Crawford, F.S.A.

MARCH 1929

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PRINTED BY JOHN BELLOWS, GLOUCESTER, ENGLAND

Price 5s. 6d—Annual Subscription 20s.

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ANTIQUITY is published quarterly on the 1st of March, June, September, and December.

THE ANNUAL SUBSCRIPTION (including postage) is ONE POUND (United States, 5 dollars). It is payable in advance to the ASSISTANT EDITOR, 24 Parkend Road, Gloucester, England.

SINGLE COPIES may be obtained through any bookseller for 5s. 6d., which includes postage. Trade orders should be addressed to the printer, John Bellows, Gloucester, England.

CLOTH CASES (lettered back and side) for binding Volume II (nos. 5–8) can be obtained from John Bellows, Gloucester, England, 4s. post free, or if the numbers are sent to him (post paid) the inclusive charge for case and binding will be 7s. 6d. Remittance must accompany the order.

MSS (whether in the form of Articles or Notes) offered for publication should be sent to the EDITOR, O. G. S. CRAWFORD, Nursling, Southampton, England, and a stamped addressed envelope enclosed. All MSS must be typewritten. Payment is made for Articles only. The EDITOR is not responsible for the opinions expressed by contributors.

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CAMBRIDGE UNIVERSITY PRESS
FETTER LANE, LONDON, E.C. 4

New Series] JANUARY 1929. 2s. net. [Vol. XIII, No. 52

HISTORY

THE QUARTERLY JOURNAL OF
THE HISTORICAL ASSOCIATION
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LONDON: MACMILLAN & CO., LIMITED
NEW YORK: THE MACMILLAN COMPANY

Antiquity

A Quarterly Review of Archæology

VOL. III NO. 9 MARCH 1929

Editorial Notes

IN the good old times before archaeology had become a profession, it was quite usual to discuss first principles. Perhaps it was felt that the quest of useless knowledge needed justification. Even today, when ' pure ' science can beat applied science on its own ground, the wrong reason is often given for doing the right thing. Possibly such a course may occasionally be justified, or at least excused ; but it is a dangerous one, and may ultimately wreck the ship of discovery upon the rocks of self-deception. It is therefore good for the would-be excavator to ask himself, before issuing his appeal, what is the ultimate objective and whether it is served by the proposed course of action ?

It is too often assumed nowadays that excavation, if properly conducted, is always and everywhere a good thing. That is not so. There are only two excuses for undertaking an excavation—the acquisition of valuable knowledge or the imminent destruction of the site. If a site is to be covered by buildings, evidence will be destroyed and excavation at some remote date will be made more difficult. If a site is being destroyed for ever by the removal of the soil in bulk, obviously there will be nothing left to dig. Under such circumstances

an imperfect examination and a defective record are better than none. That is why we have risked annoying our readers by appealing on behalf of certain urgent local excavation funds. Building at Caerleon and Colchester, and deliberate vandalism at Alchester, threaten to destroy evidence, and the respite given by cupidity and ignorance is short. Excavation on such sites has obvious claims to priority, even when less important places are concerned.

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But suppose an appeal is made for money to excavate a virgin site that is in no danger? Obviously each case must be dealt with on its merits; but we consider that there is today a strong *a priori* case *against* undertaking any such work, especially if the site belongs to a class which has already received the attention of competent excavators. Certainly it should not be undertaken unless it can be carried out as completely as, let us say, the excavation of Silchester and Richborough by the Society of Antiquaries of London; even so, it may be doubted whether, at the moment, the money might not be better employed in support of 'S.O.S.' work elsewhere.

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Here we come up against the besetting sin of provincialism. So far as our national interest is organized at all it is organized by counties, and what might be a powerful body of opinion is robbed of most of its force by being split up into 48 or more parts. Consequently we have the absurd spectacle of two groups in two neighbouring counties, the one trying unsuccessfully to collect the miserable sum required to excavate a threatened site before it is too late, the other raising a substantial sum to carry out a wholly unnecessary dig on a site of no urgent importance. And this is the state of affairs at present throughout the country. Money and labour are being frittered away on sites that can wait, while other sites are being destroyed a few miles away. If confirmation of this were needed, it would be enough to glance through the annual catalogue of destruction, most of it deliberate, recorded by the Earthworks Committee and published by the Society of Antiquaries. How many of these sites were excavated before they were destroyed? How many were even planned?

EDITORIAL NOTES

Conservation, not excavation, is the need of the day ; conservation not only of purely archaeological features but of the amenities which give them more than half their charm. Who cares for Oldbury and St. George's Hill now that they are infested with villas ? What is the use of preserving the walls of a village—such as were these earthen ramparts —if the site of the village they protected is to be built over ? Combined effort and a little self-denial in the way of excavation, excursions, and even in publication, might have saved these and other sanctuaries for the Nation; but in such matters our loyalties hark back, not even to the Heptarchy but to a yet earlier prehistoric period of the tribal organization.

In most instances nothing short of the purchase of land is of the slightest use, though in others an intelligent application of the Town-planning Act may suffice. The need is really urgent ; for with the approaching electrification of Southern England, the coniferous activities of the Woods and Forests Department and of private planters, the demands of the Services for land for aerodromes and manoeuvres, the spread of bungaloid eruptions, and the threat of arterial roads and ribbon-development—with all these terrors imminent, it is unlikely that any open country or downland will be left in Southern England in a hundred years' time. Salisbury Plain is already ruined ; the Sussex Downs are threatened. Dorset and Dartmoor however, survive, and the Cotswolds, though less prolific in prehistoric sites, are still entirely agricultural and unspoilt. A far-sighted policy would gradually acquire large portions and keep them for posterity. Though costly, such a scheme is not impracticable ; the best areas are naturally those which are least valuable for agricultural purposes. Moreover the time for action is *now*, before the price of land is raised by the prospects of development.

We advocate, therefore, a combined effort to preserve ancient sites, *and their amenities*, from those who would destroy both. If excavation is to be undertaken by local societies, let preference be given to threatened sites. Expensive nibbling at those which are not threatened is to be discouraged when England's past, and with it much of England's beauty, is perishing before our eyes.

ANTIQUITY

ANTIQUITY enters its third year full of confidence and with an exceptionally interesting programme arranged, both in articles and illustrations. Though our circulation has never stopped increasing our best publicity is through the goodwill of our supporters. With that in mind (and also their good nature) we have ventured to enclose in this number (when sent to a direct subscriber) a leaflet describing the aims and character of ANTIQUITY. We hope our readers will pass it on to friends who are likely to be interested and we shall be glad to post copies to any addresses sent to us.

The SUBSCRIPTION to ANTIQUITY for 1929 is now DUE. We would remind our Subscribers of the form and envelope inserted in the December number and that we shall be glad to have an early response. This does not, of course, apply to those who have already been kind enough to send us their cheques or to those who pay by orders on their banks.

The Magic Origin of Prehistoric Art*

by Count Bégouen

THE authenticity of the prehistoric paintings of the caves of Altamira has now been fully recognized for about thirty years, and with the many similar discoveries which have been made in France and Spain an entirely new light has been thrown on the mentality of prehistoric men. We must henceforth acknowledge that they possessed artistic tastes and a well developed aesthetic sense. No longer may we think of them as savages, solely concerned with the most material needs of daily life, but rather as men endowed with well-developed intellect and capable of considering things over and above the mere material side of the struggle for existence.

The discovery of skeletons, obviously buried with care, and surrounded with tools and ornaments, had already proved to us that respect was paid to the dead, and that there was a belief in an after-life. But with the discovery of works of art a fresh avenue of knowledge was opened up before us.

It is perhaps going too far to say that primitive man was an aesthetic being. It has even been stated by one writer on prehistory that ' the people of the Magdalenian period beguiled the leisure of their long winter evenings in fashioning works of art, to decorate the walls of the caves where they dwelt'. This is an obvious exaggeration—Salomon Reinach was the first to protest against this idea of art for art's sake, and to demonstrate that prehistoric art had a utilitarian rather than an aesthetic origin. If the cave-man painted, or drew, or sculptured, it is because he thought thus to aid the quest for his daily needs. Plainly he hoped through pictorial representation to augment his power over the beasts he hunted, just as many primitive peoples do to this day. In fact, according to Salomon Reinach, Art would appear to have had its origin in magic cult and to have developed along the lines of such beliefs. This theory, accepted by Cartailhac, Capitan, Breuil and other prehistorians, is, however, still contested by certain writers.

* Translated by Miss Sylvia Seeley, of the Canadian School of Prehistory in France.

I hope however to demonstrate by examples from our Pyrenean caves[1] that the idea that Art took rise from a belief in Magic is a far more tenable theory than that of art for art's sake.

However far along the path of civilization the cave-men may have advanced we must always bear in mind the great gulf fixed between their time and ours. Their mentality is not comparable with the average mentality of man today, still less with the mentality of the present *élite*. There are plenty of people even now who possess no sort of artistic sense whatsoever. If this is so at the present time it must have been still more the case in those inclement prehistoric times when existence itself was a fierce struggle. Art certainly had no place as a mere expression of temperament. Rather was it a mysterious weapon wherewith to encounter and overcome the Great Unknown. It is true that the polychrome paintings at Altamira and the magnificent frieze of horses fashioned out of the solid rock at Cap Blanc (Dordogne) might suggest some decorative purpose, because, in both cases, these artistic efforts are plainly visible to any number of people at the same moment, even though the natural light is not very favourable to the frescoes. But we must remember that it is certainly the exception and not the rule to find any prehistoric works of art executed in such manner as to be easily visible to the spectator.

And if Altamira and Cap Blanc are again urged as instances to the contrary, one must remember that in the case of the famous Cantabrian

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[1] A very important fact, and one which has considerable bearing on the magic theory, was the discovery in the course of the last fifteen years of some absolutely unknown caves. Furthermore these discoveries were made by prehistorians. I refer to the opening up in 1912 and 1914 of the neighbouring caverns of the Tuc d'Audoubert and of the Trois Frères at Montesquieu Avantès (Ariège), the cave at Montespan (Haute Garonne) in 1924 by my pupil Norbert Casteret, and in the same year the cave at Cabrerets (Lot) by the Abbé Lemozi.

As we knew that we were the first human beings to enter these galleries since prehistoric times, we realized the necessity of having regard to every minute detail, and the special importance of first observations. We proceeded with that caution, attention and pious regard that can only come with long practice in prehistoric research. By this means we were able to preserve untouched many unique features such as the impress of human hands and feet, besides a variety of mysterious objects; little heaps of stalactites, rolls and twists of clay, etc., many small details of which we do not know the exact meaning; and if they are in no way artistic they have some magic signification whose meaning the study of ethnography with its useful analogies may help us to guess, and in the course of comparison we may draw some useful inferences.

cave, a very considerable part of the passage leading to it has been broken down, and that originally these magnificent frescoes were very much more remote from the entrance than they are today.

In the case of Cap Blanc there is a certain parallel with the magnificent sculptures recently discovered by Dr Henri Martin. Figures have been carved in relief on blocks of stone which had obviously been used by some previous artist for a similar purpose, and the later carving was made regardless of the already existing traces. The idea seems to be to represent animals at some special given moment, and in circumstances of definite significance, rather than to produce a merely decorative effect. It was magic ritual, rather than art, which inspired this type of work. With every fresh discovery two facts stand out more and more clearly. The drawings are generally found as far removed as possible from the entrance of the cave, and in nooks and corners very remote and difficult of access. In the cave of Niaux the first drawings are found at a distance of 867 yards (800 metres) from the entrance. The famous clay bison are to be found at the furthest limit of the Tuc d'Audoubert, 758 yards (700 metres) from the entrance, and at Montespan the actual distance is even greater. The various engravings in the cave of the Trois-Frères are arranged at two different levels about 867 and 1085 yards (800 to 1000 metres) from the entrance, and in passages where one must sometimes go *à plat ventre*. It is at this point that I would challenge those who uphold the theory that primitive art was purely decorative, art for art's sake in fact. I doubt if they would still hold their ground after crawling flat on their stomachs to admire some engraving of bison or rhinoceros on the wall or ceiling. The magnificent series of reindeer, extending over nearly thirteen feet, is at the end of an extremely narrow passage, whose walls are by no means vertical. One cannot stand upright, but must perform veritable contortions in order to be able to admire these splendid creatures, graven with a technique which suggests the reindeer of Thayngen (Switzerland). They are drawn on every side, but the variety of positions one must assume in order to see them emphasizes the fact that the original artist must have been through just the same contortions while he was designing them. In fact each animal must have been drawn parallel to the line of sight.

All who have studied prehistoric art, not only in books, but in the caves themselves, must agree with me that the artist's first consideration must have been the choice of a site as mysterious, dark, and difficult of access as possible.

It is also noteworthy that the paintings or drawings are not found in those parts of the caves which were used for habitation, but always at some distance, in remote galleries or at a different level from any inhabited part. This is very true in the case of the Tuc d'Audoubert and the Trois-Frères, etc. Sometimes, as at Niaux and at Montespan, no trace of hearth or habitation has been found at all. It was in the shadowy depths of sombre caverns, perhaps where invocations were made, that the first ideas of pictorial art appear to have arisen.

Sometimes in the caves there is some accidental contour of the rock which suggests the form of an animal. This clearly attracted the attention of the original cave artist, and we frequently find that he has made use of this suggestive resemblance in the rock and completed the form of the animal by his art. At Niaux there is a certain hollow in the rock whose shape lends itself particularly well to the representation of a stag's face viewed from the front ; by adding a pair of antlers in black outline man has completed the fanciful picture which nature suggested. The natural bosses in the roof of the cave at Altamira have been utilized to much advantage in outlining the bison form. There are abundant examples of such adaptation.

Whence arose this desire to take advantage of any contour in the rock which might assist in tracing the animal form, or indeed the desire to draw at all ? The answer is to be found in the notion, current among all primitive peoples, that an image of any creature is in some fashion a part of that very creature itself. It is in fact its double, and the man who possesses the image actually has some power over the creature. Hence any harm done to the image will be communicated to the living subject of that image. The consequence of this reasoning is the key to all magic and enchantment. One could cast a spell and so hurt by hurting the image. It is needless to dwell on the innumerable historical examples of this well known practice.

Now we may justifiably assume that these ideas were current during the Stone Age. The majority of paintings and drawings in the caves are accompanied by signs which bear out this idea. I repeat, the majority, but not all, for while there are exceptions which explain themselves there are others for which no obvious reason is forthcoming. Moreover, there are certain of the magic signs whose meaning is unknown to us. But for the most part they are perfectly comprehensible.

At Niaux, at Portel, at the Tuc d'Audoubert, at the Trois-Frères, at Montespan, at Cabrerets, only to mention those caves in the valley

of the Garonne, we observe that in most of the paintings and drawings of animals arrows are clearly indicated on the flank. This was unquestionably done to ensure the success of the hunter in the forthcoming chase. Frobenius, in one of his later books, relates that when he was amongst the pygmies of Central Africa his chief huntsman invariably refused to set out on a hunt without the performance of due ceremonies beforehand. 'It is useless, we shall kill nothing! The rites have not been performed'. As he would not reveal to his master wherein these rites consisted, Frobenius had to content himself with spying them out as best he could. At dawn the pygmy left the camp and climbed to the top of a hill where he drew on the ground a picture of an antelope. As the first ray of sunlight appeared he aimed at the picture and pierced the neck with an arrow. When the real hunt took place the antelope was duly killed by a bullet in the neck precisely as the magic charm indicated. The pygmy was careful to carry away some of the blood and hair from the beast. After they had returned to the camp, the pygmy went back to the image he had drawn, pulled out his arrow and poured some drops of blood from the real animal into the hole the arrow had made, and surrounded it with some of the hair in order to be reconciled with the antelope's spirit.

This contemporary instance is thoroughly typical of the primitive state of mind and throws a valuable light for us on the mentality of the cave-man.

Sometimes we find, in addition to arrows, a wound, usually represented by a red stain or else by a groove. It may even be that the presence of suitable grooves led the artist to put his drawing there. At Niaux a little bison has been designed on the clay around three small depressions which have been hollowed out by the continual dripping of water, still in process, from the vault above. The mark of an arrow has been added to each of these nature-formed scars.

At the Tuc d'Audoubert some natural cracks in the rock occur on the finely-graven forepart of a bison. Darts have been added to give the cracks the signification of wounds.

In the Cantabrian Pyrenees are many claviform designs, representing some kind of a weapon whose precise shape and use is at present unknown to us. At the very end of the upper gallery in the Trois-Frères, on the face of a wall which has been most carefully prepared (one can still clearly see the marks of scraping), one of these weapons, measuring 17 inches long, is painted in bright red. A boss occurs in the upper third of the figure, but this is quite small, whereas in the

majority of pictures one end is very much enlarged so that the design assumes a form like the letter P.

These signs occur on very many of the animal drawings, notably on one of the horses in the Trois-Frères ; and the magnificent reindeer head in the Tuc d'Audoubert seems to be surrounded with them. Was it some kind of projectile in the nature of an Australian boomerang ? We are equally doubtful as to the meaning of certain lines, sinuous or branching such as are found at Marsoulas, and certain tectiform pictures which perhaps represent traps. Our ignorance of their signification is but an additional proof that they belong to occultism.

I have come to the conclusion that the greater number of the designs known as ' tectiform ' do not represent huts, as has generally been believed. That interpretation may be true in certain cases, as for example that at La Mouthe, which according to Breuil is very late Magdalenian, and which indeed admits of no other explanation. But the variety of designs included under the name ' tectiform ' is so wide that they cannot obviously all be explained in the same way.

I am strongly of the opinion that more than one of these tectiforms represent traps. In the Museum at Helsingfors I have seen models of traps used by the Lapps for snaring wild animals. One of them consists of a pit, in the centre of which a stake is driven into the earth, and bait is attached to it. The hole is then covered over lightly with branches and turf in a slight dome. When a wolf or fox comes to seek the bait and steps on the fragile covering, it gives way under him, and the animal is thrown into the pit. Now there are many pictures of mammoth and bison, enclosed in tectiform designs exactly resembling this form of trap, and I was glad to notice that Dr Lips in his remarkable work on ' Trapping amongst Primitive People ' had arrived at the same conclusion as myself.

In one of the mammoth drawings at Font de Gaume, one can even see that the central stake had been broken by the weight of the animal falling in. Beyond doubt this drawing was part of an enchantment designed to facilitate the capture of the mammoth, an enchantment all the more necessary considering the immense size and strength of the quarry, and the feeble weapons with which his hunters were equipped, so that it was only by artifice that man could hope to succeed.

In many places we find round spots in black, or red, arranged along the walls in lines, circles, or scattered irregularly, which I believe to represent numbers of stones to be used as projectiles. This idea is borne out in the drawing of a troop of horses at Cabrerets (Lot) and

perhaps by a bear in the cave of the Trois-Frères. I am now however inclined to accept Abbé Breuil's explanation that the bear in this picture is disguised, as we have seen in the case of other bears. But the disguise itself can only have been invented to complete some magic spell. Small discs are engraved not only on the body but all around this creature whose prominent forehead indicates clearly *Ursus spelaeus*. From his mouth, which is wide open, and from his nostrils, appear long marks as if to show the blood pouring forth, which would certainly be the case if he were killed by stoning. In a gallery discovered in September 1926 by M. Felix Trombe in the cave at Montespan (Haute Garonne) there are numerous small holes made in the clay by the insertion of a finger. I believe that a similar explanation applies to them. They represent stones or darts by means of which a herd of wild horses is to be driven into a stockade. This unusual picture, which has hardly yet been fully made known, merits a special description.

The cave of Montespan is peculiarly difficult to explore. It forms the bed of an underground river, and for more than 1300 yards the water is knee deep, and one cannot stand upright on account of stalactites. Its discovery was due to the daring enthusiasm of one of my pupils, M. Norbert Casteret, who courageously swam under the vault till he reached a gallery where he found some little clay figures which I will describe later. In another gallery which has a particularly low roof, there are many imprints of human feet, and the left wall is covered with drawings. Most conspicuous the particularly fine picture of a diminutive horse, falling over backwards. The neck is stretched out and nostrils are quivering, as would be the case with an animal struggling to regain its balance. Beyond this admirable drawing there are numerous little holes in the clay made with a finger, and also some broad vertical stripes which partly conceal some rough outlines of horses. That the whole fresco is of undoubted prehistoric antiquity is proved beyond dispute by a coating of stalagmitic formation which now encrusts it.

At the end of the passage some marks also made with the finger all converge towards a hollow formed by the removal of a mass of clay. The whole scene suggests to me a corral surrounded with palisades into which wild horses are being driven by stones and darts. It would appear to be a regular hunting scene, all the more remarkable because up to the present we do not know of any other picture in prehistoric art showing a definite grouping of animals. However close the figures

may be on the cave walls, each is a distinct and separate effort, unconnected with those which may happen to surround it.

Dr Herbert Kuhn drew my attention to the fact that the long series of vertical bands which are to be found at Niaux close to the lake and which have been regarded as some elongated tectiform, may very well be a palisade, behind which the form of some animal can dimly be made out. In fact this picture at Niaux may fairly be regarded as a hunting scene such as we have at Montespan.

The clay models of a small bear and certain feline creatures in the cave of Montespan are too well known to need description here. I would only draw attention to the fact that they are literally riddled with wounds, particularly one of the felines, which seems to confirm beyond doubt my opinion concerning the purpose for which these figures were made. The day before some preconcerted hunt, the sorcerer would come and pierce these little images with spears, and pronounce some charm over them. It is quite probable that fresh figures had to be made for every occasion, though no doubt there were exceptions. For example, the small headless bear in the cave of Montespan appears to have served on many occasions. It is roughly done, and its back and hind quarters are rounded and polished as if by frequent rubbing with something supple yet resistant, such as a bear's pelt. Perhaps it was part of the ceremony to wrap the little clay image in the skin of some animal and then fix in a wooden peg for the head. The Abbé Breuil and myself consider that the skull which was found between the paws of the small clay bear, and a triangular hole in the cross section of the neck, lend some colour to this hypothesis.

That the hunters were wont to stab the figure is proved by the numerous marks upon it, though these are now partially covered by stalagmite. It would appear to have been necessary to have a personification of the animal for every separate hunt. Hence the exceedingly large number of pictures which cover the cave walls. The tribal magician might however make use of the same figure several times over by dint of modifying an existing drawing according to the purpose required. By far the most noteworthy example of this is to be found in the cave of the Trois-Frères. It is a lion engraved on stalactite in a small circular recess. The contour of the rock lends itself to the design, the paws being simply stalactites on which claws have been engraved. There was a touching sense of brotherhood when we found a very fine Magdalenian burin (graving tool) left in a cranny of the rock, wherewith doubtless the artist had drawn his picture. The head of the lion had

been partly effaced and drawn three times over, in different positions. In like manner the tail was drawn at one time straight, and at another time curling. Probably in order to save himself trouble, the artist made use of the same figure for different occasions, and merely altered the head or the tail a little to invest the lion, which they hoped to kill, with a new personality for each succeeding hunt. It has indeed always been a recognized practice in witchcraft that an image wholly or partly new should be used on each occasion. This particular figure apparently served its purpose a great number of times to judge by the quantity of arrows engraved or painted on its body. The majority of such figures seldom bear more than two or three weapons, and often a single one suffices. It would appear also that it was not always considered necessary to make a drawing of the entire animal, but merely some essential feature such as the head, and then to elaborate some distinguishing characters such as the horns. There are numerous examples of this in the Tuc d'Audoubert : side by side with the complete pictures of animals we find a bison of which merely the forepart is given, and the head of a reindeer very carefully drawn, but the bodies are in each case lacking. In the same way at Marsoulas the artist appears sometimes to have contented himself with merely giving a careful and exact representation of the bison's horns.

To the same magic purpose I should attribute the silhouettes cut out in bone, also the engravings and figures which we find on various weapons and tools, even when merely the head or the limbs are represented. For these latter the hoof or the claw, as the case may be, shows very clearly what species of animal is intended : horse, cattle, or carnivore. The foot is enough to personify the animal for purposes of enchantment. The Abbé Lemozi, who first discovered the beautiful cave at Cabrerets, drew my attention there to the numerous figures of animals lacking both eyes and ears. This was noticeable in the mammoths, but still more so in the cattle.

We fully concurred with the Abbé's opinion that this suppression of the organs of sight and hearing had a special magic significance. How can the hunted beast without the aid of eyes and ears detect the presence of the hunter ? The idea of depriving the animals of these natural means of defence in pictorial representation was to place them at the mercy of man by means of witchcraft.

The same idea obtains in designing an animal without a head. Sometimes we find a picture or a statuette consisting of a body only. There is the particular case of Enlène (Ariège), where the statuette of a

stag's body has been used as the handle of a dart thrower. That the head has been deliberately cut off is obvious from the very clear marks of sawing on the neck.

But there may also have been special cases like the small headless bear at Montespan to which I have already made reference. On the other hand I doubt if the same explanation would apply to those curious figures of headless women roughly drawn on the roof of one of the galleries at Cabrerets.

Howsoever it may be, the idea that one could protect oneself against an animal by drawing a picture of it without a head, or without limbs, or by drawing arrows on it, recurs frequently in the magic lore of ancient Egypt. In a classic work recently published on this subject, Professor Laxa of the University of Prague gives illustrations of hieroglyphic signs where all the animals are rendered harmless. Serpents, wasps, and other creatures either have no heads or else are dismembered. Some of the snakes and crocodiles are shown with arrows on their bodies. Without going so far as to suggest the possibility of a tradition being handed down, it is none the less interesting to note these resemblances produced spontaneously in two civilizations so very remote from each other.

It is now clear that the various anomalies we encounter in prehistoric art may be easily explained by the theory of Magic, whereas the theory of art for art's sake does not solve any of the problems which arise.

It is only reasonable to suppose that in this branch of magic culture primitive man's artistic powers would undergo gradual development and improvement, and although I maintain that he embarked on his artistic career with a purely utilitarian purpose I should be far from denying that he took a very real pleasure in his work, as his technique and powers of perception advanced. Moreover he was quick to take advantage of any little facilities which Nature offered towards the achievement of his artistic efforts. How far along the path of civilization he has travelled since he first traced with earnest care such pictures as the diminutive black horse at Niaux, or the magnificent reindeer, or the bison head, so skilfully emphasized in black outline on the rock face in the cave of the Trois-Frères! No doubt a great incentive towards the attainment of a higher technique lay in the necessity of making as accurate a picture of each animal as possible in the hope of ensuring the success of the enchantment. If there existed some ritual by which it sufficed to give a name to some indeterminate object or

drawing and then to say ' This stands for such and such an animal ', it can only have been the custom of some very inferior civilization.

Generally speaking, in all magic lores the more perfect the resemblance, the greater the power of the sorcerer over his subject. That this belief was already established in Magdalenian times is shown by the fact that characters are carried to an extreme point, and the accuracy of detail in each species is such that we can even determine the different breeds among the horses, and distinguish the cave bear from the brown bear. The natural positions of the different animals are treated with a like precision which denotes the keenest powers of observation. And there is a yet more remarkable gift made evident in studying the work of these primitive artists. During the long hours while they were stalking their game these ancient hunters must have acquired an almost photographic impression of the animals they hunted, to be able to reproduce them with such minute accuracy in the dimly lit caverns. They had no such advantage as our artists of today who can work from the living model and in full daylight, and yet these early pictures are no wise lacking in life and movement.

It is fortunately a part of human nature that work well done brings its own reward of satisfaction, and the allurement of successful achievement waxes strong in the artistic soul. On this one point I can agree with those who uphold the theory of art for art's sake in Magdalenian times. The zeal of the artists was commensurate with their improving workmanship. But the mind was yet too primitive to subsist on the encouragement of a sentiment only. It still hung upon the strong impulse of magic power.

Art was born of Magic. The truth of this statement is confirmed by the fact that when man learned to support himself by agriculture rather than by hunting this primitive art ceased to exist. There was no longer need to make figures and images in order that enchantment might render the chase fruitful. That is to say that the relative certainty of daily food eliminated the necessity for drawing pictures of animals. He who has learnt to till the fields has a better prospect of the morrow's supply than he who lives by hunting only. He knows more of the laws of Nature and the rewards of personal toil. His life is less hazardous than the hunter's and consequently he has less need to seek the aid of magic. But there is one point where his necessity is identical with that of the hunter. Fecundity is just as needful among his domestic flocks and herds as among the wild beasts of the chase whereby the hunter lives.

I have hitherto spoken only of the magic to which primitive men resorted as a means of ensuring their success in hunting. They hoped with the aid of charms and incantations to kill as many beasts as possible. But they also used their art to promote another kind of magic which they hoped would ensure an ample supply of the game whereby they lived. Propagation rather than destruction was the end in view. And the one idea is the complement of the other. The hunter cannot be successful unless the game is there to be killed. The need for an abundant supply was paramount, and the ancient hunters sought to augment it through the aid of magic. There are primitive tribes in Australia who observe similar practices today. They live chiefly by hunting the emu, a large bird somewhat resembling the ostrich. Every year they hold a special ceremony in order that the supply of emus shall not fail. On the ground they make a model of the bird, surround it with pebbles to represent eggs, over which they celebrate all manner of magic rites.

The same fundamental idea must have actuated that Magdalenian artist who fashioned with such realistic touch the famous group known as the clay bison of the Tuc d'Audoubert. There we have both the male and the female. The position of the latter and the physiological details leave no doubt. She is awaiting the bull. It is a mute, appealing prayer for the increase of the bison herds. Moreover there is no trace of weapon or wound such as we see on the statuettes at Montespan and similar works of art. It is without blemish, the highest expression of the artist's endeavour and hope.

As a work of art it is unique but the idea which prompted it finds many forms of expression. Monsieur Peyrony has recently discovered in the Dordogne a bas-relief in stone representing a bull, and beside him a cow who is apparently in calf. One might quote many other examples where not only the fertility of cattle is signified, but also of reindeer. In the cave of the Trois-Frères we see a picture of the male reindeer pursuing the female, and the famous poignard of Bruniquel, now in the British Museum, was carved to represent the same idea. During Aurignacian times this same purpose of fecundity found expression in numerous figurines of women, such as those found at Willendorf, Laussel, Vistonitz, Grimaldi, Brassempouy, Lespugne etc. These are quite unlike any work of the Magdalenian period, where the human figure is extremely rare and of very inferior technique to that displayed in the representations of animals. It was the hunted, and not the hunter, that had to be embodied for purposes of magic, and as

for the question of man's reproduction, that was concerned with the law of demand rather than that of supply. Possibly also, human portraiture was forbidden. However that may have been, the few attempts we find show the human features so distorted and bizarre that they must have been intentional caricatures. Some are even obscene, such as the satyr of Portel (Ariège). So far as present discovery goes there is only one known exception, and that is the famous 'sorcerer' in the cave of the Trois-Frères.

Here we see an amazing masked human figure with a long beard, the eyes of an owl, the antlers of a stag, the ears of a wolf, the claws of a lion and the tail of a horse. It is engraved and outlined in black paint, about ten feet from the ground, in a nook most difficult of access in a small round chamber known as the Sanctuary. It seems to dominate and preside over all the hundreds of other creatures, of thirteen different species, engraved and drawn on the walls below. It is the supreme mystery of the cave. Can it be some weird deity of those primitive people? Perhaps rather it is the Arch-Sorcerer who has taken unto himself the divers attributes of the beasts he enchants, a character personified even in our own day by the Shaman of the primitive tribes of Siberia.

The forgoing remarks apply easily enough to mural art, but the question of statuettes and individual artistic objects is far more complicated. Beyond doubt Magic was the preponderating influence throughout, but it must be allowed that the problem is an exceedingly complex one, and to gain an impartial view one must examine the arguments opposed to the theories I have put forward.

Let me say at once that I think a great deal may be attributed to that nascent artistic sense which manifests itself in many of the cave drawings. The fact that the drawings were artistic was incidental to their purpose. There was no prime purpose of decoration. None the less most of the small objects which we find carved or manufactured by the hand of man for his own use bear distinct traces of decoration.

Ever since the Aurignacian age, man seems to have noted the fact that the mere repetition of regular lines or dots gives a pleasing effect to the eye, and we find unmistakeable geometric patterns at Predmost (Aurignacian), at Marsoulas (Magdalenian), and in other places. The same type of idea prevails in the deep cut spirals on the walls at Lespugne, Lourdes etc. Even in admitting with Breuil that all these patterns may be only an extreme variation of some attempt at animal form, it is hardly possible to believe that designs such as these were

connected with magic, which always demands a certain amount of realism to fulfil its purpose.

But directly we consider the animal figures and forms on various Magdalenian objects made for some definite use we find the realism of magic intent developed to the full.

How else can the figures so numerous on bone and on stone be explained, except by Magic ?

I cannot admit that it was merely for pleasure that prehistoric men engraved, for example, all those stones found at Limeuil. Nor do I agree with the opinion that this station was actually a kind of studio and workshop for the production of artistic fancies worked on stone, just as one finds sketches on canvas or paper in the studio of an artist of today. I rather believe that there were certain places sacred to some sorcerer where the figures of animals were designed each for a specific purpose. After this purpose had been fulfilled, the piece was abandoned, either because it became useless or because it became a votive offering.

There are superstitious people who still behave thus. The Arabian sorcerers will write a charm on a scrap of paper which is then swallowed or carried about in a little leather bag as a talisman.

With regard to the sculptured animals on the ' batons de commandement ', dart throwers, etc. : many indications point to the fact that they had some magic significance, especially the intentional mutilations that have been noted on so many of them. As has already been remarked the head of the stag found at Enlène, which has been used as the handle of a dart-thrower, has been purposely cut off. This mutilation could have no practical purpose, except as a punishment inflicted on an object which failed to perform the service for which it was intended.

We find these superstitions still existing among many primitive people of today who make figures of animals on their weapons. This is for the accomplishment of a twofold purpose. Firstly, they hope to be endowed with the special qualities of the animal represented—such as strength, cunning, or swiftness. Secondly, they hope that the picture would facilitate the capture of the animals represented, by reason that the hunter already can hold the image in his hand. All this relates of course to the magic of destruction. Examples of the magic of reproduction, such as little representations of the sexual organs, or the male reindeer pursuing the doe on the poignard of Bruniquel, are extremely rare.

In the cave of the Trois-Frères there has just been discovered (September 1928) an engraving on bone which cannot be placed in either the above categories. All the pictures found hitherto have represented animals which were either useful for food or else dangerous to man. One can understand that the hunters wished to kill the bison, the horse or the reindeer in order to eat the flesh, and they killed the lion and the bear because they feared them. But what can there be to say about an insignificant, harmless, little grasshopper ? Doubtless it was uncommon enough in that cold Magdalenian period. Since it could be neither useful nor harmful to man, to what purpose can it have been engraved on a fragment of a large bison bone, intentionally broken off ?

Certainly the question as to the significance of art in small weapons and tools is a very complex one. In this case we have not the solid evidence of magic purpose such as we have in the case of mural art which was created, dominated, sustained and finally brought to perfection through the pursuit of magic. However, considering the close relationship which must have existed between these two branches of art, I do not hesitate to maintain the preponderating influence of Magic, albeit in varying degrees, throughout the whole realm of prehistoric art.

'Old England', Brentford

by R. E. M. Wheeler

WHETHER Brentford was at one time Brigantford, or the ford of the Brigantes, is a question which the modern etymologist would not hesitate to scorn; nor is the identity of the site with the ford whereat conquering Caesar crossed the river on a celebrated occasion as substantial as the granite monument which now commemorates the event at the head of the ferry-stairs. Nor yet again is the name 'Old England', which the Ordnance Survey ascribes to the water-meadow on the Middlesex shore some 400 yards above the present junction of Thames and Brent, of authenticated antiquity. Nevertheless here and hereabouts, as our museums can show, was a great losing of swords and spears in prehistoric times, and here too, as we now know, were riverside dwellers at the end of the Bronze Age and, again, in Roman and later times. The name 'Old England' may stand.

In 1922 Mr O. G. S. Crawford described in the *Antiquaries Journal* a 'prehistoric invasion of England'. His invasion was that of a folk who used bronze leaf-shaped swords of a late or 'Hallstatt' type, winged axes of the kind native to central Europe, small knives with curved, single-edged blades of similar provenance and small crescent-shaped razors such as occur in the Swiss lake-dwellings. Groups of this sort are extremely rare in Britain, but at the few spots where they have been found they are sufficiently striking to have suggested to Mr Crawford 'an invasion from France or Switzerland at about the time when iron was coming into use' and at a time when central Europe must have been in a very disturbed state. 'At precisely this moment the lake-dwellings of Switzerland seem to have come to an end. So far as one can gather . . . there appear to have been no lake-dwellers in Switzerland during the Late Hallstatt Iron Age [*i.e.* 700–500 B.C.]. Can they have been driven out by other invaders from the east? and was it the lake-dwellers themselves who invaded these islands?'

If so, these fugitive Swiss may be thought to have settled on the

marshy shores of Thames in and around 'Old England'. For dredgers, clearing the channel up and down this reach, have time and again dragged up these exotic bronze implements, particularly at the point where the Isleworth and Old Brentford parish boundary strikes the Thames. The Port of London men and the local watermen, who have

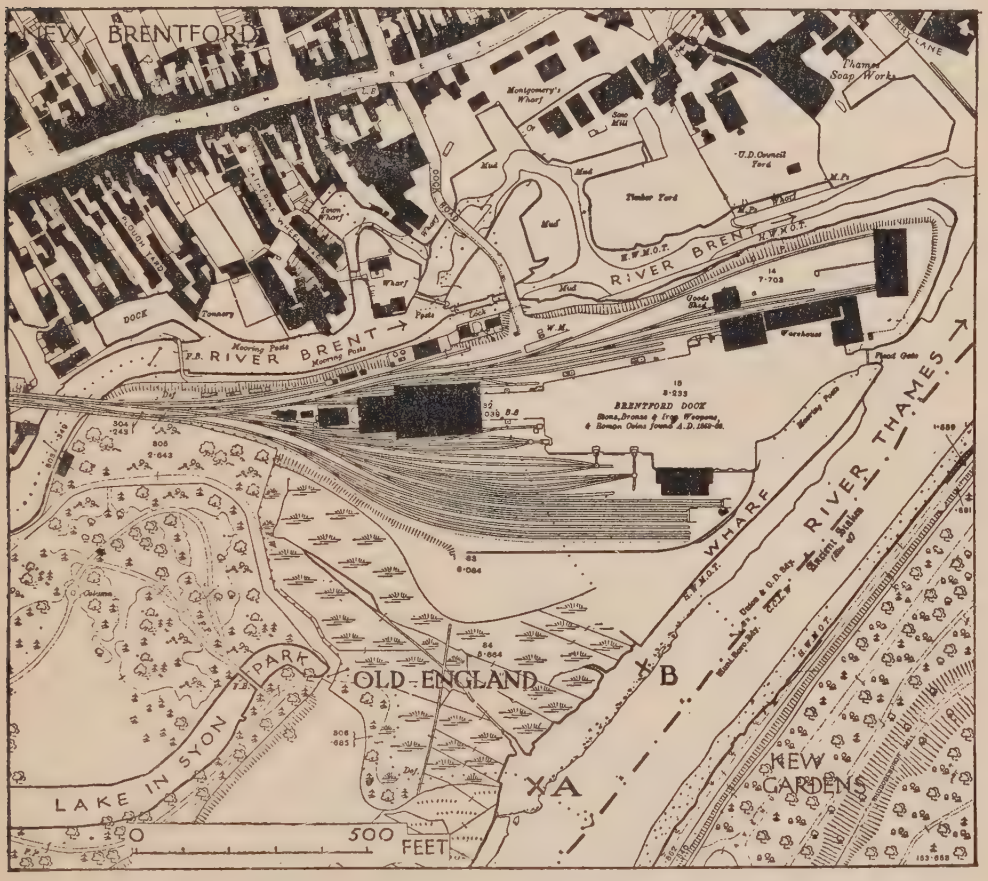

FIG. 1. SITE-MAP, SHOWING SITES A AND B
Adapted from the Ordnance 25-inch map Middlesex XX, 4, by permission of H.M. Stationery Office

actually seen the finding of these things, say that they occur normally at a distance of 10 or 20 feet out towards mid-stream from the present low-water mark. Other implements of a similar kind have been found during the building of the dock upon the promontory within the fork of the two rivers.

For the diligent collecting of these relics, gratitude is due to two men. The first of these was the late Mr Thomas Layton of Brentford whose collection is now in the Brentford Public Library. (Here, in the interests of science, a word of warning may be uttered ; a great part of his invaluable collection comes from the neighbourhood of the Brentford ferry, but his method of marking his specimens was insecure and only the older labels are really reliable). The other picker-up of unconsidered trifles is Mr G. F. Lawrence, whose collections from this site have found their way into the British Museum and the London Museum. Some of these are here illustrated (plates I and II).

Recently, Mr Lawrence's beneficent activities happened to attract the interest of the newspaper Press, with the ultimate result that in July 1928 the *Daily Express*, through Mr H. V. Morton, generously placed funds at the disposal of the London Museum for the purpose of carrying out a trial-excavation on the ' Old England ' site. To Mr Morton a special word of thanks is also due for active cooperation throughout the proceedings, and the Port of London Authority incurred our gratitude for permission willingly granted.

We began our work upon the basis of Mr Crawford's entertaining theory. Here we had a site upon which, it was supposed, we might find the tracks of one of the greatest industrial revolutions in the story of central European civilization—the revolution incidental to the supersession of bronze by iron. Here, *ex hypothesi*, was the last lake-dwelling built by the last of the Bronze Age lake-dwellers whose conservative adherence to the old bronze tradition had compelled them to flee the new Men of Iron ! And this, with the help of twenty long-shoremen and half-a-dozen University of London students, is what we found.

The ' Old England ' meadow is seamed by small water-channels which are, in some cases, dry under normal conditions, though one of them regularly carries the overflow from the lake in the grounds of Syon House. It seems likely that, at its junction with the Thames, the Brent at one time formed a delta over this low-lying ground and that these vanishing water-channels are a remnant of this feature. Today, the meadow ends in a vertical ledge of alluvium, 4 feet or more in height, which marks the normal extent of the high tide. Below this ledge, for a distance of 40 feet or more, the foreshore slopes gently downwards, and is in most places covered with a deposit of alluvial slime. It then slopes more sharply towards mid-stream and, at a varying distance below the low-tide level, drops at a still steeper angle where the river-bed

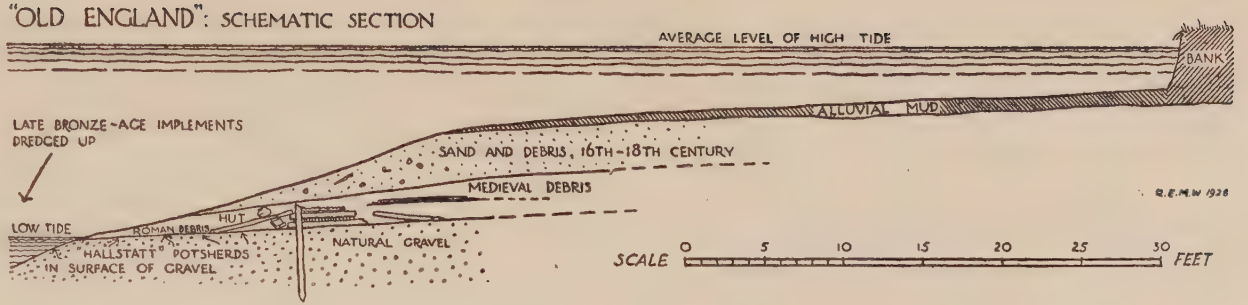

FIG. 2. SECTION THROUGH THE FORESHORE AT 'OLD ENGLAND'

has been dredged for navigation (see section, fig. 2). The outer and steeper slopes of this foreshore are, for the most part, encased in clean gravel.

Our method of excavation was to drive a deep trench along the brow of the foreshore immediately below the lower limit of the alluvial slime and to throw out branch trenches at right-angles from this towards the low-tide line. In the course of these operations we cut through a series of deposits, which were as follows.

On the surface of the gravel were the usual modern relics, but there was no well-marked stratum which could definitely be regarded as 18th–20th century. It is clear that the scour along the lower part of the foreshore has been too vigorous to allow any regular deposit during that period. Beneath the surface, however, was found throughout the line of the longitudinal trench a well-marked deposit of sandy gravel containing relics ranging in date from about 1600 to 1700 A.D. This material had clearly been placed in position deliberately and was not deposited by river action—a point of some interest which will be referred to again in another context.

Below this 17th-century embankment were found here and there extensive deposits of burnt material, animal-bones and shell-fish (oysters and mussels) associated with medieval pottery which is described in the schedule at the end of this paper. The largest of these deposits was towards the north-eastern end of the site at the point marked B on the map (fig. 1).

Below this again, at the spot marked A on the map, were found remains of earlier occupation. As we approached this level, we came across loose oak-piles and broken twigs in the superincumbent sand; but it was not until one of the workmen, groping below the receding tide, brought up a complete Roman pot (plate V), that we received our first hint as to the period of the ruined structure. Clearing downwards as the tide receded, we came at last upon piles in position, and finally, in the brief space of time during which the tide was at its lowest ebb, were able to uncover a part of the floor of the hut from which the Roman pot had already been recovered. (Plates III–IV.)

Preliminary notes were made as to the nature of the structure as the tide once more covered the site. The following particulars include those obtained both at this time and at the subsequent ebb.

Incomplete though the particulars be, they represent the herculean labour of workmen and students, up to their knees in water and working feverishly with buckets whilst pick, trowel and fingers uncovered the

fragile fabric. It must be admitted at once that neither the outline nor the full extent of the pile-dwelling was ascertained but, without some sort of caisson in which to work, it was beyond human possibility to achieve more than we did. In the hope of recovering what we could of the half-exposed and therefore endangered structure, our men worked through the dark hours and into the dawn at the task of removing the over-lying bank of gravel—from 5 to 7 feet in height—under which the partly exposed pile-dwelling extended.

The principal fragments of the hut which were thus uncovered are shown in plate III. They included a complete section of the flooring, which was as follows (fig. 3). A vertical timber, which was doubtless carried up originally as one of the wall-posts of the hut, was driven more than 3 feet into the gravel—how much more it was not possible for us to ascertain. On the surface of the gravel a horizontal timber was laid at right angles to the pile and doubtless, at one time, lashed to it. A layer of green clay was then laid on the surface of the gravel to the height of this transverse timber, *i.e.* to a height of about 6 or 7 inches. Upon this layer of clay was then placed a longitudinal layer of wattles which extended across the prostrate timber. Upon this wattle bonding-course (as it may be called) a second horizontal timber was laid, directly above the first, and flush with its top a further layer of green clay was added. On this second clay-bedding was placed a double layer of wattles, the upper at right angles with the lower. This double layer of wattles seems to have formed the final floor, which was thus nearly 2 feet above the surface of the gravel. The whole structure was clearly of one period and represented a systematic attempt to form a damp-proof floor on ground which was either marshy or liable to flood. The timbers were unsquared but several of them were sharpened at the end, although, in one case at least, used not as a pile but as a horizontal bond. A few of the loose and fragmentary timbers on the site, however, had been roughly squared, and one of them (marked X on plate II, 2) was shaped in such a way as to suggest that it had formed part of a dug-out canoe.

The general period to which the hut may be ascribed was sufficiently indicated by the presence of a piece of Roman roofing tile in the upper clay layer and beneath the wattle flooring. Around the hut were found a few sherds of Roman pottery and seven other pieces of Roman roofing-tile and brick together with bones of horse, ox, red-deer and pig (see schedule at the end of the paper).

One or two other fragments of evidence may be added. In the

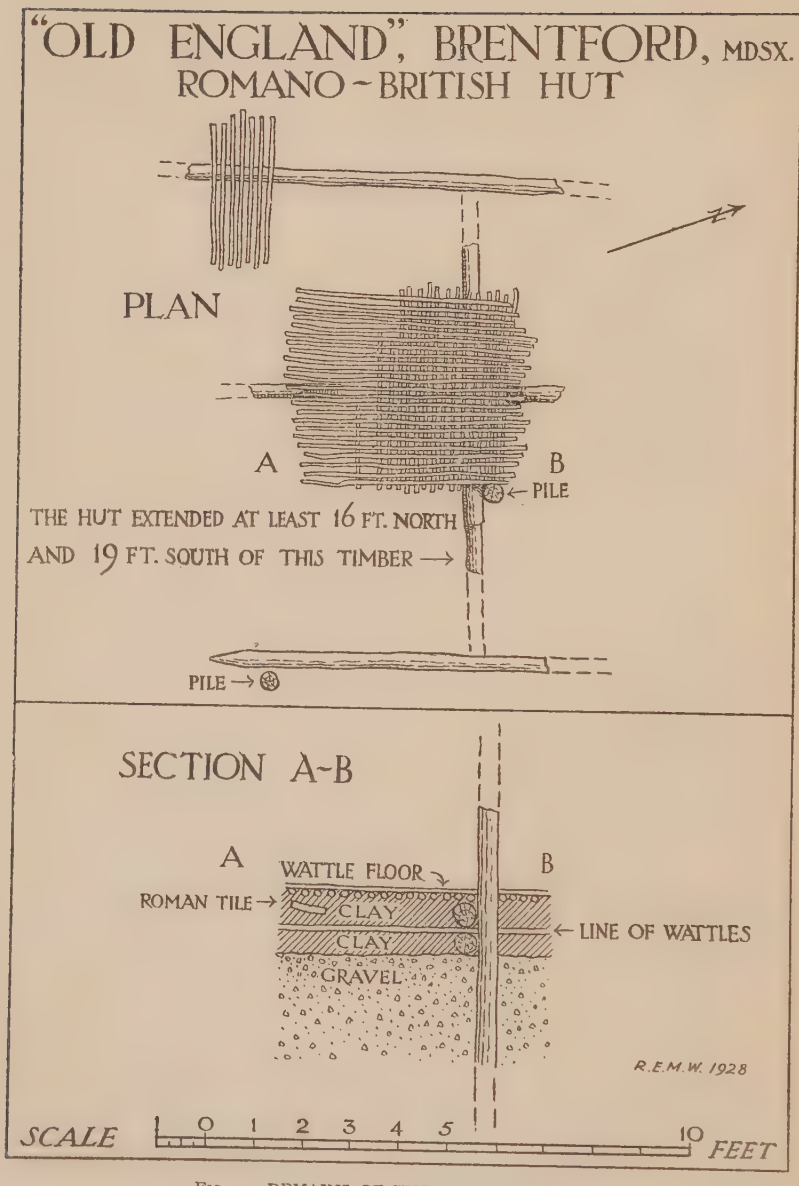

FIG. 3. REMAINS OF THE HUT ON 'SITE A'

first place it was tolerably clear from the arrangement of the timbers which were still *in situ* that the hut had been of rectangular and not of circular plan. In the second place it had been of considerable size since, though the actual structure was fragmentary, the clay-bedding of the floor was easily followed, in so far as time allowed, and was found to extend to a total distance of not less than 35 feet from south-west to north-east.

The discovery of this Romano-British pile-dwelling—the first of its period recorded in these islands—did not mark the end of our work. In the surface of the gravel around the hut, and still more in the gravel which extended *below* the present low-tide level, we were able to recover upwards of twenty fragments of coarse hand-made pottery, generally dull brown in colour and flecked with fragments of white calcite. Very few of these pieces bore any indication of form and those which did were extremely fragmentary. (See schedule and fig. 4). It was sufficiently clear, however, that here at last we were approaching our original goal. The pottery, like so many of our later prehistoric wares, cannot yet be dated with any precision, but it may with confidence be assigned to that half-millennium which in central Europe is known as the 'Hallstatt' period (about 1000-500 B.C.). The finger-nail decoration on one of the sherds, the applied moulding on another of them, and the broad-shouldered bowl which others seem to represent, are reminiscent of the types that occur in this country on a few sites such as Scarborough[1] which seem to have been occupied at the extreme end of the Bronze Age and the beginning of the Age of Iron. This phase in Britain was probably one of long duration and it was certainly one which was distinguished rather by the intrusion of a number of scattered immigrant cultures than by any consistent home-grown product such as had marked the middle Bronze Age. These prehistoric potsherds therefore from 'Old England' are just such as we should expect to find in association with the foreign bronze implements from which our search began. Pottery of this rough and friable kind, in quantities such as were found in the restricted area explored by us, unquestionably indicates a local settlement of the period; so that although our excavations have failed to reveal an actual 'Hallstatt' lake-village at 'Old England', they at least help inferentially to substantiate one of the essential elements in Mr Crawford's theory.

In conclusion a word may be said in regard to two points which emerge from our Brentford excavations. The first of these must

[1] See *Archaeologia*, LXXVII, 179.

already have struck the reader almost as forcibly as it struck the excavators. The pile-dwelling was at, or even below, the present low-tide level of the Thames. Moreover, a majority of the fragments of prehistoric pottery were found even further still below the level of the low-tide. Again, it was yet further out that the late Bronze Age

FIG. 4. PREHISTORIC POTTERY FOUND AT AND BELOW LOW-TIDE LEVEL. (¼)

implements were dredged up. It is clear that in prehistoric and Romano-British times the water-level of the Thames was here very much lower than at the present day. This fact has long been recognized, but no more forcible piece of evidence has yet been produced.[2] Without reopening the whole problem in the present context, it is now agreed

[2] For a discussion of this point see the report of the Royal Commission on Historical Monuments on *Roman London* (1928), 13 ff.

that in the neighbourhood of London, at the beginning of the present era, the level of high tide must have been 15 feet or more below its present level in relation to the existing land-surface ; and it is probable that the tide, which now flows inland as far as Teddington, scarcely extended at that time above the site of London Bridge.

We may therefore suppose that in the 'Hallstatt' period, the Thames at Brentford was a tideless stream, only half the width perhaps of the present tidal river, and that in Romano-British times, although it may have grown in size, it had yet scarcely reached the present low-tide level. Our Brentford evidence enables us to go a little further. The remains of the Romano-British pile-dwelling were covered with a layer of clean river sand, deposited presumably by the river as its level rose

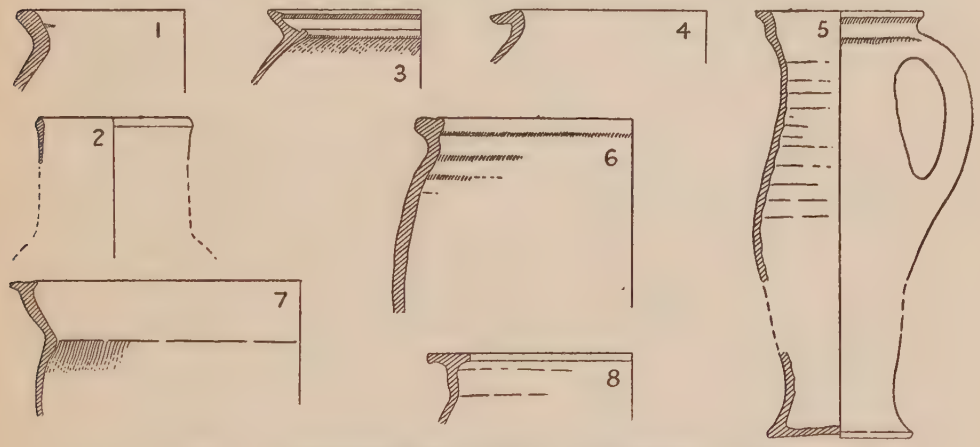

FIG. 5. 1–2, ROMANO-BRITISH POTTERY; 3–8, MEDIEVAL POTTERY
From the foreshore at 'Old England'. (¼)

in later Roman or post-Roman times. In the top of this sand occur the relics of medieval occupation. Then, later in the 17th century, the ever-rising stream was embanked, doubtless by the wealthy occupants of the neighbouring Syon House. At the present day, the river hereabouts from time to time plays havoc still with its embankments, and its formidable growth is not yet perhaps complete.

A second point of interest is the close general similarity between the structural details of the Romano-British pile-dwelling at Brentford and the late prehistoric pile-dwellings of the Glastonbury lake-village. At Glastonbury also, the floors are sometimes of wattle and, though the damp-proof courses of clay are not repeated there in detail, the

Glastonbury villagers used layers of clay in an analogous fashion in their efforts to keep above the water-level. At Glastonbury, however, the huts were in every case circular on plan, whereas ours was almost certainly rectangular. Nevertheless, the excavators of Glastonbury note that certain of the timbers of their circular huts had previously been used in rectangular structures[3] ; and this vacillation in the choice of plan extended into the succeeding period. Thus whilst the riverside peasants of the Roman period seemingly lived in rectangular huts at Brentford, they were at the same time content with primitive circular huts further down the river at Tilbury, where, incidentally, it may be noted that the remains are now also covered by the tide.[4] It is clear that, as in Wessex, where the researches of General Pitt-Rivers and Mr O. G. S. Crawford have shown that the greater part of the country-folk continued throughout the Roman period to inhabit their prehistoric villages and to pursue their prehistoric system of agriculture, the peasantry of the Thames valley likewise retained their pre-Roman traditions altered only superficially by contact with Roman civilization. The time is almost ripe for some ingenious archaeologist to write 'The Un-Romanization of Roman Britain'.

SCHEDULE OF FINDS

(*Note :* all the objects illustrated are preserved in the London Museum)

I. Prehistoric.

Fig. 4, 1 (=pl. v 1, 3). From site A. Part of the rim of a large vessel with an applied strip immediately below the lip. I have not found an exact analogy to this, but Mr Reginald Smith has shown me a somewhat similar fragment (unpublished) amongst the pottery from the late Bronze Age—Early Iron Age site at Scarborough.

Fig. 4, 2 (=pl. v 1, 1). From site A. Fragment of the shoulder of a coarse urn of gritty brown ware with a row of finger-nail (almost finger-tip) impressions. Similar vessels occurred in the above-mentioned site at Scarborough (*Archaeologia*, lxxvii, p. 187, fig. 23), in the Hallstatt area at Park Brow (*Arch.* lxxvi, p. 16, fig. 4), at All Canning's Cross, and on other sites of the same transitional period.

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[3] Bulleid and Gray, *Glastonbury Lake Village* (1911–17), 1, 56.

[4] Royal Commission on Historical Monuments, *South-East Essex* (1923), 38.

Fig. 4, 3 and 4 (former = pl. v 1, 2). Both from site A. Fragments of roughly made bowls of calcited ware, one with everted rim slightly grooved on the inside. This type of rim is characteristic of 'Hallstatt' pottery; it occurs frequently, for example, in the Scarborough series. The general type of bowl is found fairly commonly on Hallstatt sites in central and northern Europe.

Fig. 4, 5. From site A. Fragment of fairly well levigated black ware with striations. This sherd might in itself be of almost any Early Iron Age date. It is, however, closely similar to certain of the Scarborough sherds (*e.g. Arch.* LXXVII, pl. XXI, 13), and is probably of the same period as the preceding fragments.

Apart from many indeterminate fragments of the gritty hand-made ware found during the excavations, a piece of a flat base of similar fabric had been picked up previously by Mr Crawford on the foreshore.

II. ROMAN.

Bones of horse, ox, pig, and red deer.

Five fragments of Roman flanged roofing-tiles, and one piece of a Roman imbrex found on site A, one of the flanged tiles being discovered below the wattle floor of the hut. Three pieces of Roman brick from $1\frac{1}{2}$ to 3 inches in thickness, also from site A. One complete grey pot probably of 2nd-century date (pl. v 1, 4) and 14 sherds of Roman pottery from the floor of the hut (site A), one of them being below the wattle flooring. It is scarcely possible to date any of these vessels with precision, but one of them (fig. 5, 2) is the funnel-neck of a beaker of Castor ware which is not likely to be earlier than the second part of the 2nd century.

III. MEDIEVAL.

Six pieces of medieval pottery were found (fig. 5), three of them in unsealed deposits (3–5) and three of them (6–8) in a thick layer of burnt material which underlay the 16th–17th century embankment on site B. This thick burnt deposit covered an area of some 50 square feet and was upwards of a foot in thickness. It contained bones of horse, ox, sheep, pig, red deer, and two breeds of dog (one of them short-nosed), also numerous oyster and mussel shells and the three sherds.

The following notes may be added on this pottery:—

Fig. 5, 3. Fragment of a buff vessel with traces of green glaze. The rim is grooved to receive a lid. Of uncertain medieval date.

Fig. 5, 4. Part of a flat-rimmed vessel of grey ware and uncertain medieval date.

Fig. 5, 5. Jug of hard buff ware with slight traces of green glaze. This tall slim type is probably early medieval—12th–13th century—but has not been closely dated.

Fig. 5, 6–8, are from the same layer and are probably contemporary. 7, of sandy brown ware, is probably part of a cooking pot with sagging base, such as occurs with 12th–century pottery at Rayleigh Castle (*Essex Arch. Soc. Trans.*, new series, XII, 182 and 185). 6 is of similar ware and is likewise comparable with pottery from the Rayleigh site. 8 is of hard grey ware, and less easy to match.

IV. 16TH–18TH CENTURY.

This material came from the artificial embankment of sand and gravel referred to in the main description. The layer contained great numbers of animal bones, amongst which Professor D. M. S. Watson, F.R.S., notes the following :—ox in great quantities, horse, sheep, dog, and birds, but no deer. Other objects which may be mentioned are :—

(1) A wooden tent peg (pl. V 2, 1).

(2) Two brick loom-weights or net-sinkers (pl. V 2, 8).

(3) Fragment of a 16th-century incense-pot of buff ware with green and yellow glaze (pl. V 2, 6).

(4) Fragment of 17th-century brown slip-ware with green pattern (pl. V 2, 7).

(5) Small drug-pot of white glazed ware (pl. V 2, 10); 17th century.

(6) Several small 17th-century bricks, some measuring not more than $4\frac{1}{4} \times 2\frac{1}{8} \times 2\frac{1}{4}$ inches.

(7) Several fragments of 17th- or 18th-century tobacco pipes (pl. V 2, 9).

(8) A human femur (pl. V 2, 11), in regard to which Sir Arthur Keith very kindly sends the following note :—' Heavily mineralized left femur of a young person . . . The boney projection in the popliteal line is in the origin of the short head of the biceps muscle—of the nature of an injury—being an exostosis following a tear or strain in the origin of the muscle '.

The Origin of the Kelts*

by Georg Kraft

THE origin of every nation lies beyond the range of written records. It is one of the principal tasks of prehistory to supplement and extend backwards the historical tradition until it brings those events within its purview. The difficulty of the task is greatest where the historical record is shortest. So the peoples of northern and eastern Europe who most deeply concern us Northerners present one of the most perplexing problems to the archaeologist.

In the case of the Teutons the problem has been materially clarified by Scandinavian investigators. Moreover Gustav Kossinna in Germany has devised for its solution a method all his own which the Vienna school has subsequently applied to the Illyrian question. But in western Europe the Teutonic invasions for the most part fall within the domain of history. The forerunners of the Teutons in England, France, western Germany and in parts of Spain and Italy were the Kelts. The latter in places maintained their identity side by side with the Teutons, and in any case constitute a vital element in the present population of the regions in question. No wonder then that archaeology turned early to the elucidation of the problem of Keltic origins.

A hundred years ago the first prehistorian at my University, Heinrich Schreiber, had already recognized the importance of this question. Like his contemporaries, he assumed that the Kelts might be identified with the pre-Teutonic population in general. The same error survives today ; popular anthropology habitually speaks of the short, round-headed, dark-eyed Kelts. Schreiber regarded the Bronze Age in particular as a peculiarly Keltic product. Such a mistake reveals the stupendous methodological difficulties that stand in our path. The cradleland of the Teutons, southern Scandinavia, was never occupied by any foreign nation ; in the case of the Kelts no comparable nuclear region can be identified. Almost everywhere they have been expelled from their seats by the Teutons. Even where they have succeeded

* We are indebted to Prof. V. Gordon Childe for translating this article.—Ed.

in maintaining their purity, they occupy regions naturally designed as refuges where they are probably mixed with older layers of exiles. Moreover they only took possession of the major part of their territory, including northern France and Britain, in the centuries immediately preceding our era.

Our aim therefore is to locate the cradle of the Kelts. To that end history and archaeology must cooperate. We must first determine where and when the oldest and most reliable historical tradition allows us to locate Kelts. Then we must ask what culture the region thus fixed enjoyed at the date in question. Every great people while maintaining its national identity possesses a culture of its own. Hence in the region indicated by history as Keltic we must find a peculiar culture which may be claimed as Keltic too. A second way of approach is opened up by the warlike expansiveness of the Kelts. Where the Keltic raids and invasions impinged upon the domains of classical civilization, we may expect the oldest and most reliable reports about Kelts from the ancient authors.

The first line of attack, the quest of the Keltic cradle, has long ago been tried. Déchelette's excellent manual gives a conspectus of the results thereby attained. Here I need only recall that the Keltic migrations reached Spain even before 500 B.C., penetrated Italy in the 5th and 4th centuries (Rome in 390), traversed South and Central Germany in an easterly direction about the same time (Delphi in 279) and finally arrived in Asia Minor. The centre from which these movements radiated must accordingly be localized in the lands north and west of the western Alps on the Rhine and the Rhone. The reports of Hecataeus and Herodotus point in the same direction. Therewith we reach the limits of historical tradition in so far as it is consistent.

In their expeditions to Italy and Greece the Kelts took with them a specific civilization, the so-called La Tène culture. Its home lies in the region just defined. It is beyond question that the La Tène culture was the national civilization of the Kelts, and that it arose out of the fusion of native industry with classical influences. But whence comes this La Tène culture? The previous period, covering roughly the first half of the first millennium B.C., is known as the Hallstatt period. During it a peculiar culture extended along the northern edge of the Alps from Austria across South Germany to eastern France. Thus the last named culture embraced within its domain also the area wherein the La Tène culture was cradled. We must therefore define the relations between the Hallstatt and La Tène cultures; we must determine

whether the latter, in so far as it was expressed in native industry and not in imports, was developed out of the former. Unhappily to such a question we can only reply that prehistory has never tackled the problem systematically. It is further complicated by the circumstance that the East Alpine sub-group of the Hallstatt culture is today generally ascribed to the Illyrians. Of course the Hallstatt culture in South Germany and eastern France differs in by no means unessential particulars from that of the eastern Alps. Still do these none too important divergences justify the attribution of the respective cultures to two absolutely distinct peoples, Illyrians on the one hand and Kelts on the other ? Some of the earlier writers have in fact refused to make such a division ; some like Déchelette ascribe the whole Hallstatt culture to the Kelts, others like Schliz prefer to see in the South German Hallstatt culture an outpost of the Illyrians.

Since the light of historical tradition does not penetrate into the Keltic cradle, we must have recourse to the second plan outlined above and look where the Kelts for their part approached the light of classical civilization. In Greece and Italy they appear already in possession of the La Tène culture so that we obviously get no further. But may they not have invaded other countries at an earlier date and in possession of a culture older than the La Tène ?—*i.e.* of Hallstatt age ? That is in fact the case. Even Déchelette recognized that the Kelts had invaded Spain before 500 B.C., and the La Tène culture began about that date. We therefore eagerly enquire what culture these oldest traceable Kelts enjoyed.

The possibility of answering today this question, which in Déchelette's time was still insoluble, is due to the careful excavations of several Spanish investigators. I may instance the Marquis of Cerralbo and above all Prof. Bosch-Gimpera of Barcelona, who by unremitting labour and with extraordinary acumen has collated all the archaeological and historical data on the settlement of his country in the happiest way. As a result it is now certain that the Kelts were the bringers of a late Hallstatt culture whose distinctive features in Spain are cremation and the horse-shoe sword (other traits such as the girdle-clasp are local or Greco-Carthaginian). Now the same short sword with horse-shoe pommel recurs in the late Hallstatt culture of southwest Germany and France. We are therefore justified in claiming for the Kelts the Hallstatt culture of this area whose individuality is expressed in ornament and in other peculiarities.

But not satisfied with this, Bosch-Gimpera has made a second and

almost more valuable contribution to the solution of the Keltic problem. The late Hallstatt culture of Spain just mentioned is restricted to the north, the centre and the west of the Peninsula. And it was precisely here that Keltic tribes (Berybraces, Cempsi, Saefes) were settled at a later date according to the classical authorities. On the Mediterranean coasts however the Iberian tribes maintained themselves and indeed reacted upon the invaders (hybrid Keltiberian culture for instance at Numantia). In harmony therewith the late Hallstatt culture is entirely missing, for example in Catalonia.

This circumstance is of extraordinary significance. For there are plenty of typically Keltic place-names in Catalonia such as Besalú, Verdú and Slardú (containing the element *dunum*) or Vulpellac and Gaussac (formed with *acum*). The late Hallstatt Kelts cannot be responsible for these names ; a still later invasion, say of Gauls, into regions so close to Emporion could not fail to have left its mark on historical tradition. Must we not therefore acknowledge herein proof of a still earlier intrusion of Kelts ? I might also mention that Avienus speaks of the tradition that about 600 B.C. Iberian tribes advanced along the coast from south Spain to the Rhone and destroyed Narbo (Narbonne) ' ferocis maximum regni caput '. What was this ' regnum ' ? Can this kingdom have been Keltic and can its traces in the shape of the above-mentioned place-names have survived to this day ? What has archaeology to say to this ?

Bosch-Gimpera has solved this problem too. In Catalonia and in that part of Spain alone a substantial number of urnfields with their connected settlements have come to light. In their character these correspond exactly to those of the early and middle Hallstatt period of South Germany. Bosch-Gimpera and his colleague, Colominas, have thoroughly excavated one of these urnfields at Terrassa and have published the essence of their results. These Catalonian urnfields belong to an age prior to 600 B.C., and so anterior to the advance of the Iberians just recalled. Judging by their aspect they were laid out by invaders from the slopes of the western Alps, where we have provisionally localized the Kelts' cradleland. This is the sole invasion that can be traced in the whole of Catalonian prehistory. The invaders occupied the fruitful plains of the coast while a native culture persisted in the mountainous hinterland. With them arrived a new breed of domestic animal, an ox of the maritime breed.

All these indications point in the same direction. The folk buried in these urnfields must have been responsible for the afore-mentioned

Keltic place-names. So they must have spoken a Keltic language. This is the oldest certain basis that is so far obtainable from historical tradition and it is unlikely that we can exceed it. That circumstance justifies a somewhat more detailed scrutiny of these urnfields.

As is implied in the name, the dead were without exception cremated, the ashes enshrined in an urn, and this covered with a dish or a stone and buried in the earth. A multitude of such flat graves were grouped together, forming a cemetery or urnfield. At Terrassa the oldest part lay in the east and the graves spread out gradually westward. Grave goods are almost totally lacking. The urns possess biconical bodies surmounted by a cylindrical or conical neck with *everted* bevelled rim. They are often decorated with meander patterns. Thus they recall both in form and decoration the Villanova urns of Italy. The lids are ornamented sometimes with ribs, sometimes with fine linear incised patterns. The last named motives as well as some of the urns and dishes agree perfectly with the pottery of the Swiss lake-dwellings and the Rhenish urnfields.

This observation brings us back for a third* time to the same region, eastern France, southern Germany and Switzerland, as the cradle of the Kelts. What then has archaeology to tell us about these countries at the time in question? Owing to the political division between three distinct States their exploration is very uneven. Chantre's investigations in particular have not been continued along modern lines. A few years ago I began an examination of the Swiss Bronze Age to round off my studies on the South German. I was at once struck with the fact that throughout prehistoric times great unitary cultures occupied the upper courses of the Rhone and its tributaries, the Saône and the Doubs, that is to say, Burgundy, Franche Comté and western Switzerland including Valais. Yet as a whole these cultures had escaped the notice of prehistorians. Of course everyone knew of the Neolithic and Late Bronze Age lake-dwellings of western Switzerland and Savoy. Specialists were acquainted also with the rich Iron Age barrows of the Jura and Côte d'Or. But no one had recognized that a no less brilliant or powerful culture flourished here in the Early and Middle Bronze Age. The reason of this ignorance was simply that its remains had been tragically dispersed through unlucky accidents; only in the last few years have a few closed finds been rescued through the intervention of the museums in Bern and Zurich. Yet in point of fact this region

* See pages 34, 35.

constituted a unitary and self-contained cultural province which I have proposed to call Rhone culture or the West Alpine culture. I have set forth in detail the proofs of this contention so far as it applies to the Bronze Age and within the limits allowed by the extant material.

Now a whole series of geographical and stylistic considerations support the claim of this region to the title of the Keltic cradle. The land is admirably adapted for settlement and throughout history has repeatedly shown itself to be a reservoir of population. To prehistoric man, who shunned the primeval forest, the limestone of the Jura, the dry valleys of Valais and the banks of the innumerable lakes offered attractive settlement sites. The same circumstances facilitated traffic, and we know that at least in the Bronze Age the Alpine passes were frequently used, probably as a consequence of the post-glacial warm dry phase. Our area lies in proximity to Italy, the Mediterranean, Spain with her wealth of ores, the French flint mines and the East Alpine cultural province. Northward too the way leads to the amber of Jutland and the Teutonic bronze industry. Even in historical times an intense cultural focus lay here. In the Völkerwanderungzeit the tribe of Burgundians settled here, and from its fusion with the natives sprang the wonderful civilization of the medieval Burgundian kingdom.

It is moreover significant that throughout prehistoric times right down to the threshold of the Middle Ages a specific and unitary style persisted in this district although often overlaid by foreign elements. In the New Stone Age this style was not yet definitely formed, but expresses itself with masterly firmness in the decoration of the great triangular daggers of the Early Bronze Age. (Though hitherto regarded as Italian, far more have been found in graves in Valais and its environs than in any other comparable region). In the Late Bronze Age the pottery of the lake-dwellings, and in the Hallstatt period the barrel-armlets, give expression to the same artistic tradition. In the La Tène period classical influence inspired by Romano-Hellenistic naturalism for a time ousted the native art, but as Unverzagt[1] has shown, the latter persisted in spite of all and emerged again in late Roman pottery as classical influence ebbed. While in Ireland the curvilinear La Tène patterns survived down to the beginning of the Middle Ages, native ornamentation in the proto-Keltic area was strictly rectilinear in late Roman and Merovingian times.

[1] *Präh. Zeitschr.* XVI, 1925: 'Studien zur Terra sigillata mit Rädchenverzierung'.

The West Alpine style is in fact characterized by a rigidly and very highly developed rectilinear stroke-ornament. It resisted curvilinear motives (*e.g.*, the spiral) as far as possible ; the meander was inspired by south-eastern cultures but immediately transformed and soon eliminated altogether. Naturalistic motives were absolutely rejected. In comparison with Teutonic and Illyrian industrial art the early Keltic is very conservative, particularly in the form of vases. Perfect elegance combined with an obstinate conservativism in shapes is the characteristic feature of this art as a whole.

But how did this West Alpine culture arise ? In the neolithic period a sub-group of the Western cultural family, best known from the lake-dwellings, dwelt in these regions. Before the end of this period the population was augmented by substantial contingents of Pyrenaean megalith-builders and Bell-beaker folk. About the same time the land was overrun by Nordic hordes too. The Rössen people descended the Rhine from Central Germany, to be followed at the beginning of the Bronze Age by Corded-ware folk. Still more important were currents from Bohemia and Hungary, where the Aunjetitz culture had grown up out of Nordic and Danubian elements. Now this Aunjetitz culture is of first class importance for the Aryan question ; for Hellenes, Illyrians, Italici and Kelts seem to be rooted in it. In any case it extended across South Germany and Upper Italy to the Rhone. Through its fusion with the native and immigrant West European population and with the Rössen and Corded-ware folks arose the West Alpine culture of the Bronze Age.

The latter once again was reinforced by contingents from the East. At the very end of the Bronze Age tribes spread from the area in Austria and eastern Germany, that may loosely be designated the Lausitz province, and reached the Swiss lake-dwellings and eastern France. These are the people of the South German urnfields. But as soon as they reached the domain of the West Alpine cultures their character was gradually but unmistakably modified ; they were, that is, absorbed by the natives. The advance just described obliged part of the West Alpine population to migrate westwards ; they it was who made their way to Catalonia.

We thus obtain the following crucial dates in Keltic prehistory.

c. 2500–1800 B.C. Intrusion of Nordic and Aunjetitz folk into the West Alps and their foothills ; fusion of the invaders with the native West European population to form the authors of the Early Bronze Age culture.

1200 B.C. Invasion of Lausitz urn-field folk. Emigration of part of the West Alpine population to Catalonia.

600 B.C. Beginning of the historical Keltic migrations with an invasion of northern Spain.

Now a decision on the point at issue between Déchelette and Schliz as to the ethnic attribution of the East and West Alpine Hallstatt cultures has become possible. In consequence of extensive commercial intercourse and of the intrusion of the Lausitz folk, the culture of the Hallstatt period is very similar throughout the whole Alpine region. To that extent Déchelette could well regard both as a unitary culture in a provisional classification. Since a strong Illyrian infusion reached South Germany with the Lausitz folk, Schliz was justified in speaking of the Illyrian character of the South German Hallstatt culture. Closer examination has, however, revealed that in this zone marked variety existed that is most obvious in Austria on the one hand and on the Upper Rhone on the other. The extent of these differences is such, combined with historical tradition, as to justify us in seeing in these two great cultural groups two distinct peoples, Illyrians and Kelts, on the same cultural level and sprung from a common stem. South Germany lay on the frontier between these two provinces and received influences from both.

Obviously Keltic history obeys the same rhythmic law, as that observed in the remaining branches of European and Asian prehistory. Towards the end of the New Stone Age we discern Nordic hordes drifting southward everywhere in Central Europe and these have been identified with the Aryans. Then in the closing centuries of the 2nd millennium the world was again in commotion: the Hittite kingdom collapses; northern peoples threaten Egypt; the Dorians invade Greece; Veneti, Etruscans, Iapyges and Messapians pour into Italy. Finally about 600 B.C. the climate of northern Europe began to change seriously for the worse, occasioning the Teutons' emigration.

Here a correlation with philological data is possible. Among Indo-European languages Keltic is most closely related to Italic. The two peoples must long have lived in intimate cultural contact. But at the beginning of the Iron Age this community was dissolved, since the word for iron is fundamentally different in the two languages. Indeed in Keltic the name of that metal has been borrowed from Illyrian. The archaeological data correspond. The Bronze Age civilizations of the Upper Rhone (Keltic) and of the Po valley (Italic) have a like origin,

representing a West European substratum overlaid with an Aunjetitz infusion ; consequently their industry in the Early and Middle Bronze Age was similar and indeed partially identical. At the beginning of the Iron Age a transformation supervenes ; the Lausitz urnfields penetrate into western France and with them the knowledge of iron

EUROPE AT THE END OF THE 2ND MILLENNIUM B.C.

working, while in Italy such urnfields do not occur. The agreement is complete and applies to the total aspect of the culture noted above ; even in the form and decoration of the triangular daggers, the lake-dwelling pottery and bronzes and in the barrel armlets is the same *esprit* traceable.

In the foregoing account I have taken the reader at a rapid pace through the tortuosities of the Keltic problem and have described the position as it appears from the standpoint of the new view elaborated by Bosch-Gimpera and myself. For details, in so far as any are available, I must refer the reader to the specialized literature. The expert will, however, have noticed that the path of our argumentation is a strait one and for long stretches still unpaved, while on either hand wide regions still lie beneath the mists. I should be the last to overlook these difficulties and for this reason have avoided any premature conclusion in my previous works. The abandonment of this sceptical attitude is due to the extraordinary agreements between the Swiss and the Catalonian finds, between the conclusions of Bosch-Gimpera and myself though we were both working independently. These seemed to me a guarantee for the correctness of the view just advanced above.

The outstanding questions are, on the contrary, of secondary importance. But a few of these might be briefly mentioned.

In the case of England the main question is—Who were the first Kelts in the British Isles and whence did they come ? The discoveries at All Cannings Cross provide a new basis for the solution of this question, as does the subsequent identification and publication of a corresponding culture on the Continent near Epernay in the Jogassien. The Society of Antiquaries are to be congratulated on providing a substantial scholarship to enable an English student to devote himself to the intensive investigation of such finds. Only through the cooperation of all countries interested in the Keltic problem can a real and comprehensive solution be obtained.

Proof of the obscurities still enshrouding the archaeological relations between Britain and the Mainland is provided by the circumstance that three investigators in the course of the last two years have independently recognized in the Late Bronze Age influences from the islands on the Continent (Kraft in the razors,[2] Sprockhoff in the shields,[3] and Favret in the decorative buttons). Until such questions be faced in their finality—and the Bronze Age of Britain might be added—it would be premature to enunciate theories on the basis of isolated phenomena. For instance it is plain that the West Alpine cultures played a leading part in the elaboration of the bronze swords

[2] ' Urnenfelder ', *B.J.* 131, p. 187.

[3] Ebert, *Reallexikon*, XI, p. 259.

(Antennae, Mörigen–Auvernier–Hallstatt B sword-series). But were the North French flange-hilted swords the product of the same industrial province or on the contrary were the Rhone cultures influenced thereby ? Who shall decide ?

Another entirely unsolved question is raised by the Ligurians. They are a non-Indo-European aboriginal race who on the testimony of place-names once inhabited the whole of western Switzerland and the adjoining territories down to the Rhine and the Rhone. And so many authorities have attributed the local Bronze Age to them. But in point of fact the Catalonian urnfields connect these Bronze Age cultures with the Kelts, and hitherto it has been impossible to ascribe a specific culture to the Ligurians such as has been discovered and recognized in the case of the Germans, the Illyrians and now the Kelts. This circumstance is quite in harmony with the ancients' accounts of the savage character of this mountain tribe. Doubtless their domain had been wider in the Neolithic period while in the Bronze Age migrations they had become penned up in the mountains or absorbed.

A third series of complicated questions is raised by the Bronze Age cultures that, before the intrusion of the urnfields, occupied South Germany and France side by side with the Rhone culture, but yet can be neither Keltic nor Illyrian nor Teutonic. The best known is that characterized by fretwork decoration in pottery and burial under a barrow. The last named peculiarity is also attested for the Kelts of the Jura (the choice between flat graves and barrows is largely determined by the nature of the soil, economics and social conditions). But the grave-goods on the Rhine and on the Danube for example are so different that I find it impossible to ascribe to the barrow-builders a unitary culture or even an ethnic unity. When these questions are solved—and being purely archaeological they presumably admit of a solution—their correlation with the special data of comparative philology and historical tradition must begin. For instance do divergences in material culture correspond to the two great divisions of Keltic speech ? What of the two main groups of Early La Tène culture, Marnian with flat graves, and the regal barrows on the Rhine ?

A multitude of enthralling problems challenge us, but their solution presupposes painstaking study. Only when that has been accomplished shall we be entitled to talk of a comprehensive theory of the Kelts. But the task is possible. If only the prehistorians in all the lands concerned had explored their territories as exhaustively as Bosch-Gimpera has done in Spain the final solution would be a simple task.

ANTIQUITY

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The Solutrean Sculptures of Le Roc

by Henri Martin

RECENT discoveries in the Valley of Le Roc (Charente, France) have thrown entirely new light upon the art of the Solutrean period. Though gems of flint workmanship, like the laurel-leaf blades and single-sided shoulder-points occur, engravings and sculptures were formerly considered rare.

Before the Le Roc discoveries, the known Solutrean engravings were confined to an antelope head found at La Cave (Lot) by M. A. Viré, a horse identified at Solutré by Dr F. Arcelin and the Abbé Breuil, a mammoth from Bavaria and another from Ardèche (France). To these should be added the sculptures of the Fourneau du Diable (Dordogne), found by M. Peyrony. These last were on blocks which rested on a typical hearth-level and their age seems quite certain. Their style, compared with that of Le Roc, is relatively primitive.

The station of Le Roc has added to this list a remarkable series of engravings on limestone. Since 1925 I have published engravings of a small horse and of a bison, later a fine engraving of a large ox superimposed on a bear, this last being executed with great skill and care. The engraving, moreover, is not always limited to simple lines ; taking advantage of the natural features of the stone, including imbedded fossils, the artist accentuated certain of them. Thus he uses a fossil polype to form the body of a strikingly realistic serpent.

Up to the end of 1927 my researches at Le Roc had yielded only one instance of sculpture—a cylindrical bit of limestone surrounded by grooves and having at one of its extremities lines drawn to delineate a human face. The full development of the sculptural art of the Solutrean period only became evident after the recent discovery of the workshop of Le Roc with its remarkable frieze.

The Le Roc valley is bounded on each side by cliffs about 20 metres high. In the northern cliff, which of course faces south, are many caves and rock-shelters. The river, reduced now to a mere streamlet, was formerly much wider and must have yielded an abundant supply of fish, while the adjacent plateau would provide the hunter

with big game required for food such as reindeer, horse, and wild oxen. The cliff on the right bank, in the neighbourhood of two deep caves, does not fall vertically ; the descent is interrupted by a platform, discovered in process of broadening the trenches already dug in the slope. The advantageous position of this platform had been noted by the Solutreans, who had therefore occupied it. Vast deposits of burnt bones, ashes, and calcined pebbles prove a long period of occupation. Flint flakes are abundant, and even complete implements of the best workmanship are not uncommon. These include laurel-leaf blades, single-sided shoulder-points, piercers, gravers, scrapers, found in the ashes and rejects.

The workshop occupies an area of about 40 square metres ; it was bounded on the upper, or cliff, side by large blocks of stone, arranged in a semicircle. (Plate I). Wishing to continue my researches under these blocks, which covered part of the archaeological deposit, I had the first block on the right thrown over by a charge of high explosive. It weighed about 500 kilograms, and after it was overthrown, I saw a fine sculpture on the lower side which had been in contact with the archaeological deposit. Even before any cleaning was attempted, one could distinguish a small horse, about the size of a fox-terrier, and the body of an ox lacking the head, which turned up on the next block. It proved, however, to be not a real ox but an imaginary animal with a head like that of a boar or carnivore, an elliptical eye, an elongated muzzle, pointed ears, and no horns. The sculpture is very carefully carried out and the details well executed. (Plate II). The animals are represented as walking, the precision of the movement reflects an astounding power of observation in the artist. The same can be said for all the figures of the frieze. The sculpture is executed in very deep champ-levé, with a relief of 6 centimetres in places. The total length of the block is 1.64 m.

Proceeding to disengage the blocks in sequence along the left side of the semicircle I detached three less bulky stones. When reassembled they produced a complicated scene, whose principal subject is a horse. In examining its method of execution one finds that the head of a first animal, an ox, had been broken off, and another substituted, that of a horse. (Plate III, C). The fore feet and the neck of the original ox are both plainly visible. The fore foot of a second ox can also be seen, suggesting two animals facing each other. This superposition is very common in *engravings* of the Reindeer Age, but in sculpture it is, so far as our knowledge extends, quite exceptional. Another block produced yet another horse, of the same size as the last. (Plate III, D).

The last block situated at the extreme left of the semicircle was of large proportions, measuring 1.52 m. in length. It was removed with every possible precaution, and on the under side (which was again in contact with the archaeological deposit) were revealed numerous and complicated sculptures. We see from left to right first a sketch figure apparently representing a masked human being, with bent legs, in an attitude suggestive of dancing. Next, towards the middle of the panel, are two small horses, and, below, another animal rather difficult to identify, with elongated muzzle and raised tail. Then to the right the body of a large musk-ox extends to the edge of the block. The hind legs are in motion and the lowered head is seen between the fore legs, as if in the act of charging. On the side of the stone is the very realistic representation of a man in flight. His stick rests upon his shoulder, his legs are bent, and he is looking sideways as if in terror.

The study of these sculptures suggests that they were executed by more than one artist. Some of them are simply rough drafts, others are carefully finished ; salient portions of the stone are even in some cases made smooth by polishing. But the picture of the charging bull is a work attributable to an artist of the first rank.

It is probable that the bas-relief was enhanced by colour, traces of which, in the form of manganese, still survive on the sculptured surface. This process has, moreover, been observed on many of the engravings copied by the Abbé Breuil in Dordogne and in Spain.

The implements used by the sculptors of the Reindeer Period were very simple. They consisted of large, strong gravers of flint, for chiselling out the stone, scrapers to make smooth the surface, and hammer-stones for hammering and pecking. Traces of this work are still visible. The sculptured blocks were originally set on stone bases, the whole forming a kind of frieze only slightly above ground level. Against this background, on the platform in front, the Solutreans lived, chipping flint and cooking their meals. Here too, doubtless, the artists did their work. What was the motive which inspired them ? Was it religious or magical ? Mystical engravings usually occur in the inner-most recesses of caves. Can one see in these designs a love of art which was its own justification ? There is no answer to these questions ; but at Le Roc one may see one feature which is common to most of the sculptures—they seem to represent pregnant females. We may thus suppose that a worship of fertility is a possible explanation.

All the sculptured blocks were found lying in a semicircle, with the ornamental faces on the ground and the backs of the animals towards

the platform. The blocks were therefore intentionally overthrown ; one might attribute this to the vandalism of an invading people. The blocks rested on a Solutrean occupation-level and were covered by two other layers which can be attributed to the Solutrean period. The sculptures are thus precisely dated ; they belong to the period of the highest development of Solutrean technique and cannot be confused with the Magdalenian period, which is wholly unrepresented at Le Roc.

Near the workshop, under a shelter of stone blocks, I found a Palaeolithic burial. It consisted of three skeletons resting on a Solutrean hearth 90 centimetres thick. These skeletons are of great importance—they belong to the Chancelade type, the skulls are carinated, the faces broad and flat, the orbits rectangular. Their height, calculated from the long bones, was small ; one was no more than 1.52 m. and the other 1.57 m. They approach the type of modern Esquimaux. The skeletons were buried under stone blocks, and amongst them I found several worked flints of Palaeolithic type, and several reindeer bones. The presence of the reindeer remains is important as evidence, for it shows that the burial cannot be Neolithic. Since the skeletons belong to the Reindeer Age, have Chancelade features and a Mongoloid aspect, there is nothing to prevent our attributing them to the Solutrean period.

The Solutrean period is not precisely defined ; its deposits are not constant ; in whole regions they are entirely lacking ; but there is complete unanimity of opinion that it falls between the Aurignacian and Magdalenian. The work carried out for many years in the valley of Le Roc causes me to differ somewhat from orthodox writers in my opinion of the Solutrean period. I think that it should be regarded, not as a true *epoch* but as a *phase*, during which Mongoloid invaders influenced the sedentary tribes of Western Europe. These men, far from being ignorant of sculpture and engraving, brought in with them the remarkable technique of flint-working and they possessed amongst them artists of the highest talent. These Mongoloids—the authors of the Le Roc frieze—arriving at the close of the Aurignacian period, formed small centres whose skill and talents were imitated. That the influence of these tribes was unevenly exerted we may infer from the frequent absence of the Solutrean layer in deposits of the Upper Palaeolithic period. Their artistic inspiration, however, is undeniable.

Durrington Walls

by O. G. S. Crawford

PROBABLY not one in ten thousand of those who pass through the middle of Durrington Walls is aware of its existence. Though plainly visible when once pointed out, the earthen ramparts have been so greatly altered by ploughing as to be hardly recognizable, and the reconstruction of their orginal form is a very pretty exercise in field-archaeology.

The walls consists of a round enclosure, cut into two unequal parts by the road from Amesbury to Netheravon (Wilts), about a mile and a half north of Amesbury, on the west bank of the Avon. Woodhenge is only eighty yards to the south, close to and on the west side of the same road. The earthwork differs fundamentally from the ordinary defensive 'camp', for it encloses, not a hill-top but a coombe or hollow, and it has its ditch *in*side, not outside, the rampart. In this latter respect it resembles the circles at Avebury and Marden in Wilts, Knowlton in Dorset, Thornborough in Yorkshire, and Arbour Low in Derbyshire[1]; though there are points of difference. In size, Durrington Walls compares closely with Avebury, whose great earthen circle is slightly smaller in diameter; from east to west the internal area of the Walls is 1300 feet across, and from north to south about 1160 feet. (The average diameter at Avebury is 1130 feet). Both too are within easy reach of a stream, the Avon being 100 yards from the eastern entrance of the Walls, and the Kennet 330 yards from the nearest point of the great circle at Avebury. The enclosure at Marden actually touches the banks of the Avon at a point higher up in its course.

The site has been strangely neglected by archaeologists. It did not escape the eagle eye of Sir Richard Colt Hoare (*Ancient Wilts*, I, 1812, p. 169) who picked up a great deal of pottery within the area. Not a scrap is now to be found on the surface; but in 1927 I was lucky enough to find the half of a perforated stone (fig. 1) not far from

[1] See my notes in the Handbook of the British Association for the Leeds Meeting, 1927.

the centre. I sent it to Dr H. H. Thomas, of the Geological Survey, who says that ' it is made of an olivine dolerite which in this instance is characterised by decomposed crystals of olivine showing as small dull red grains '. With regard to the probable source of this material, Dr Thomas says: ' I think we may dismiss Devon, Cornwall and Wales, also the Lake District and the North of England generally. But rocks of similar character occur along the Welsh borders at Rowley in Shropshire, south of Wellington '. He added that several large polished axes

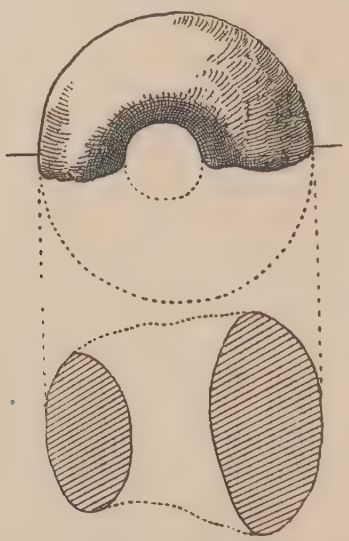

Fig. 1. PERFORATED OBJECT OF DOLERITE, PROBABLY HALF OF A MACE-HEAD, FOUND INSIDE DURRINGTON WALLS: SCALE 1:2. (Devizes Museum)

of identical material have already been found in Wiltshire[2]; and, without knowing where it had been found, guessed that this also was a Wiltshire specimen. The shape is curiously asymmetrical, and it may have been made from the broken half of a perforated stone axe-hammer, like the specimen found recently at Thornton Dale in Yorkshire. (*The Naturalist*, September 1928, p. 286).

For more than a century after Colt Hoare's time no one seems to have paid any attention to Durrington Walls; but in 1917 Mr Percy Farrer wrote a most valuable account of it in the *Wiltshire Archaeological Magazine* (vol. XL, 95–103), illustrated by a contour plan and four

[2] See his notes on these in the *Wiltshire Archaeological Magazine*, vol. XLIV, Dec. 1928, pp. 246–7.

sections[3]. For years Mr Farrer has studied the earthworks of the Plain ; has noted and measured the exposures of soil made during the erection of Army huts ; and has become familiar with these wandering ditches whose purpose, or purposes, form so fruitful a subject of discussion. Mr Farrer had the advantage of seeing a trench driven right through the western rampart of Durrington Walls—to make a drain for Lark Hill Camp ; but he had not the advantage of using air-photographs. I am able to make use of both and hope to convince Mr Farrer of the truth of my interpretation, which differs in some respects from his.

Originally, as I said above, Durrington Walls consisted of a circular rampart and inside ditch whose larger diameter is from east to west. The present condition of the remains however, as a result of ploughing, varies in different sectors of the circumference, and each must be separately analyzed. The whole may be divided into two portions, one on each side of the modern road through it. The smaller, or eastern portion, is that in which the best visible sector of rampart and ditch is presented (Q–B in fig. 3). Both are under plough ; but the rampart is very plain, showing as a broad white chalky mound when looked at from the direction of Amesbury and from Woodhenge itself. Here the real dimensions of the bank and ditch can be appreciated ; originally they must have been colossal, to account for their present overall width of about 150 feet, the ditch alone being 40 feet across (the present width of the rampart and ditch at Avebury is exactly 150 feet). At the bottom of the coombe enclosed, at B, is a gap, representing an original entrance, as Mr Farrer has pointed out. The break in the ditch is evident upon the ground ; Mr Farrer has measured the entrance causeway between the two ends of the ditch and finds it to be 30 feet wide. Air-photographs do not show this break in the ditch, probably on account of the greater depth of soil at the bottom of the coombe ; but they *do* show a break here in the rampart. Mr Farrer was however mistaken in thinking that there was 'a gap of about 100 yards here' ; the width of the gap was very much less.

In field 4 the bank is hardly to be discerned, but it is just visible in the corner of field 5 (at H), both on the ground and on some air-photographs. There must have been a wide berm between the bank and ditch.

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[3] Reproduced here as figs. 2 and 4, by kind permission of Mr Farrer and the Wiltshire Archaeological Society. *Letters* refer to my own plan, fig. 3.

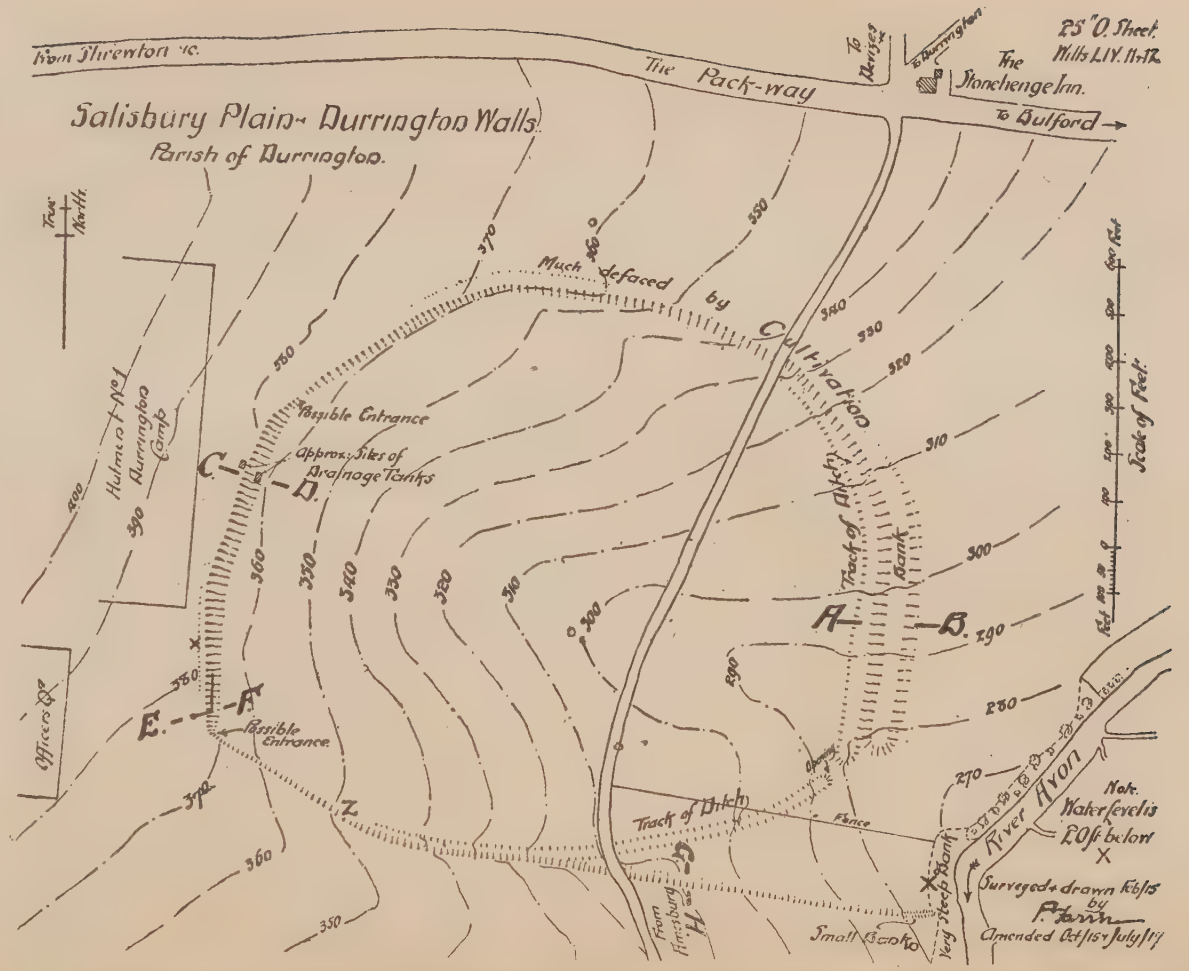

FIG. 2. CONTOURED PLAN OF DURRINGTON WALLS, FROM A BLOCK KINDLY LENT BY MR FARRER AND THE WILTSHIRE ARCHAEOLOGICAL SOCIETY, (*see* W.A.M. VOL. XL)

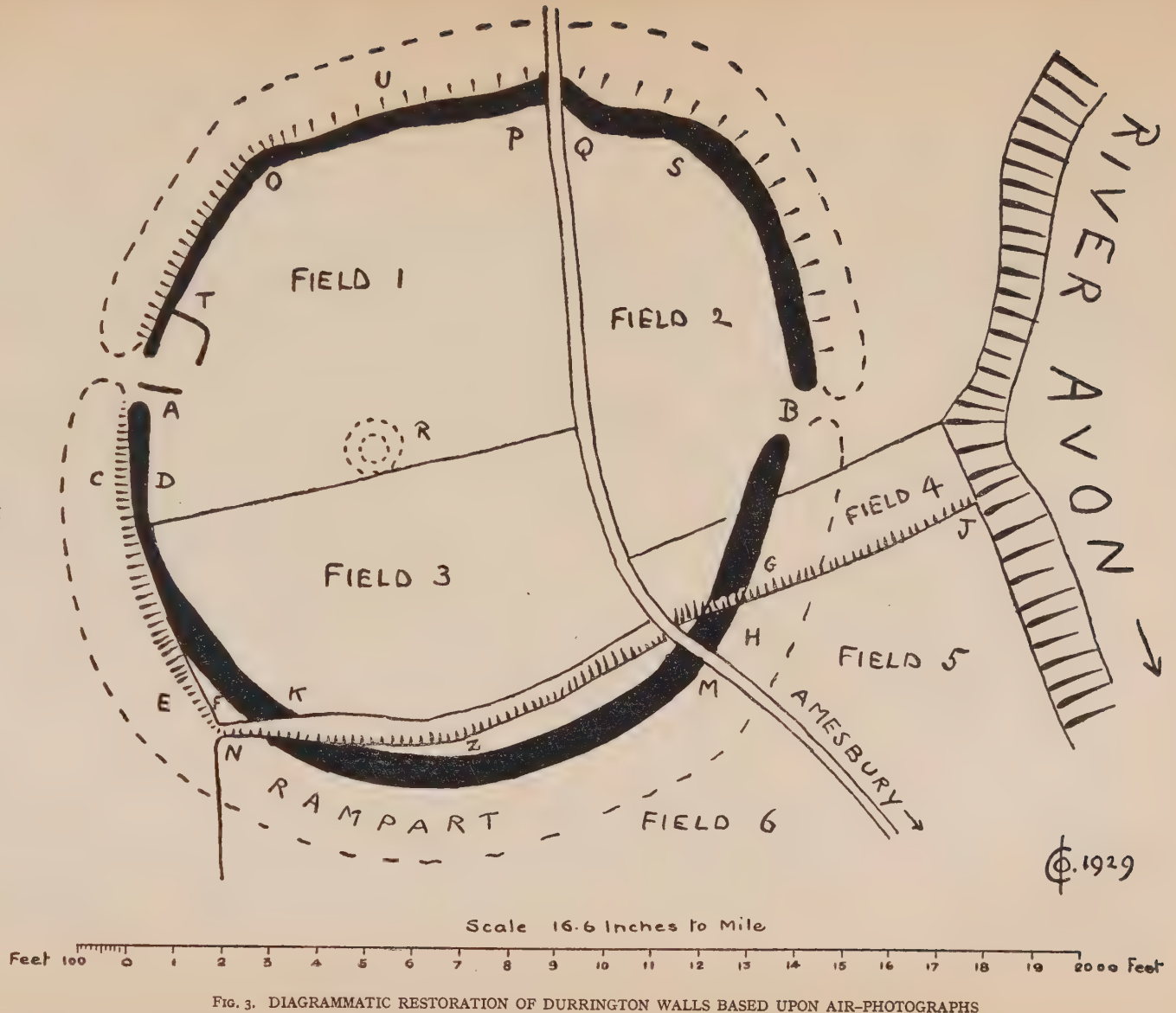

FIG. 3. DIAGRAMMATIC RESTORATION OF DURRINGTON WALLS BASED UPON AIR-PHOTOGRAPHS

The western portion of the area is more complicated, but also far more important. From N to the road runs a grass-grown depression. The southern scarp of this depression is continued to the river-cliff at J as a *single* scarp without any ditch. Now this depression has generally been regarded as the ditch of the 'camp' itself; and it has been concluded (not by Mr Farrer who rightly describes it) that the single scarp G–J, which is apparently a direct continuation, must also be part of the camp. But that is not so; it is merely a lynchet, positive and negative, formed by ploughing—the same process which in field 4 has levelled the rampart. Of the rampart in field 6, the remains may be seen quite clearly under certain conditions. It is most plain in dry weather when the soil is bare; then it shows up, even on the ground, as a broad white band, very slightly raised. It is also revealed by the contour-lines on Mr Farrer's plan (fig. 2). No air-photograph of it has been taken in this condition, but it is faintly visible on several (see plate I). As it approaches N the surface is covered with large blocks of chalk, of which (as we know from Mr Farrer's section E–F) the rampart was composed.

The course of the ditch along the western side of field 3 was first revealed by an air-photograph taken by Mr Keiller[4] (plate II). It leaves the grass-grown portion at K and sweeps across the SW corner of the field towards another scarp E–C, at the foot of which it runs to A; there it ends, at a point where there must therefore have been another original entrance—the only other whose existence is at all certain. The scarp C–F consists of natural undisturbed chalk at the base, but of piled-up rubble on the top. At E this rubble is 4 feet thick, and evidence of its existence has been found elsewhere along this portion, as we shall see later. The masking of the ditch here, so that it eluded even so experienced a 'ditcher' as Mr Farrer, is probably due entirely to cultivation; for it is well known that, given a fairly steep natural escarpment, ploughing will increase the slope of that escarpment by biting slowly into it. (This process may be seen going on today at the top of any ploughed field at the foot of the downs). In the course of time the inner lip of the ditch would thus be lowered by several feet.

[4] The ditch is revealed by the corn which in May 1924, when the photograph was taken, was fairly high. Over the silted-up ditch it had grown more luxuriantly and was therefore of a denser green colour, appearing as black on the photograph. This very luxuriance or rankness had however weakened the stalks so that, in that tempestuous year, they had been blown flat in places by the wind and rain. These fallen patches correspond to the *lighter* patches on the photograph. Here the stalks, being horizontal, reflect more light.

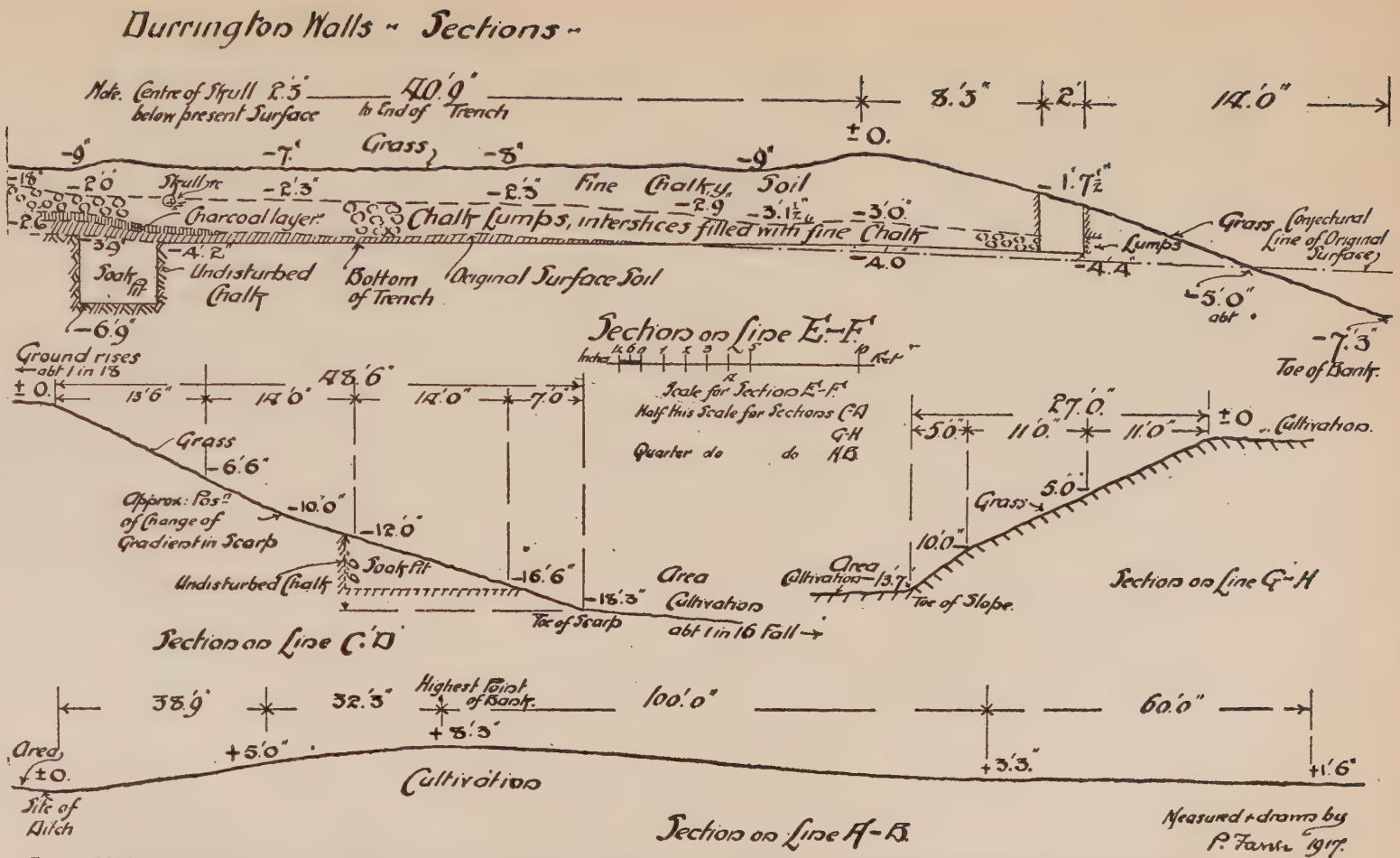

FIG. 4. SECTIONS AT DURRINGTON WALLS, FROM A BLOCK KINDLY LENT BY MR FARRER AND THE WILTSHIRE ARCHAEOLOGICAL SOCIETY, (see W.A.M. VOL XL)

The evidence for an original entrance at A is provided by plate III, where the U-shaped end of the ditch can plainly be seen on the south side of the causeway. This is precisely the spot where Mr Farrer had already suggested one[5]. It is also exactly opposite the other entrance at B, a feature whose possible significance will be explained below.

Here also appeared in the corn in 1927 the dark outline of a squarish enclosure (T–A and plate III; the ground was darkened at this point by the shadow of a cloud, but the general outline is plain). The enclosure lies inside the ditch which forms its fourth side. Of its age or purpose we know nothing—it may be of any date. It does not appear on any other air-photographs, but some of those taken before were from too great an altitude for it to be visible. It may easily be located on the ground, even by a blind man, by means of the reeking dump of refuse which is accumulating here from Lark Hill.

The grassy scarp ends at O, where both bank and ditch are again entirely under plough. Between O and P the southern margin of the ditch is very plain on the plate (III). It runs right up to the road with no sign of a break, and resumes its course again immediately beyond. Neither here nor at M, where the road leaves the area on the south, is there any sign of an original gap. The road itself is probably quite modern. There are no signs of hollow tracks of the pre-metalled period, such as nearly always accompany an old-established highway, and the only route along this side of the Avon valley was probably that shown by Colt Hoare running along the edge of the cliff, past J—no more than a farm track.

Important evidence of the character of the rampart was obtained in 1917 when a drain was being laid from Lark Hill to a soak-pit located at E. Mr Farrer recorded the strata in a carefully measured sectional drawing (fig. 4 section E–F) from which it will be seen that at E there was a layer of made soil about 4 feet thick extending outwards (westwards) from the scarp for a distance of at least 56 feet. This layer consisted of an upper stratum of fine chalky soil, 3 feet deep at the east end (on the brow of the scarp), but mostly about a foot and a half thick and already beginning to thin out rapidly at the west end of the trench. Below it was a stratum of chalk lumps about a foot and a half thick. The interpretation of these two layers is quite easy. The lower layer of chalk lumps represents the rampart, spread out by long continued cultivation. (It will be remembered that large lumps of chalk still lie

[5] Mr Farrer's other possible entrance, at K, cannot have existed, since the ditch is unbroken here (plates I and II).

on the surface of the rampart between M and N). The upper layer of fine chalky soil is a cultivation-bank or lynchet of comparatively recent formation. Mr Farrer almost says as much himself (p. 101): 'The depth may have been increased by washings from the higher land to the westward; the colour made us think that the soil must contain a very large proportion of broken down chalk'. I differ only in regarding the *whole* of the upper layer as having been thus formed.

On the top of the lower layer was found a skull and some other human bones. They appear to have belonged to a beaker-man, since they are described as being typical of the Early Bronze Age. Their presence here is difficult to account for, but the find is not of much value for dating purposes and we need not therefore discuss it further. Its best result was Mr Farrer's visit, of which it was the immediate cause.

At the west end of the trench (extending also beyond it) was a layer 4 inches thick of charcoal and flints, resting on the old surface line and containing burnt bone, at least one fragment of which was human. It was covered by the layer of chalk lumps. In the charcoal Mr Farrer found a potsherd ornamented with oblong punch-marks and identified as part of a beaker by Mrs Cunnington and Dr Blackmore. Unfortunately the significance of the charcoal layer cannot at present be explained; but the beaker sherd found in it proves that the rampart *here*, and presumably therefore the whole of Durrington Walls, was not erected before the Beaker period[6].

Mr Farrer attaches some importance to 'a small piece of Late Celtic [Early Iron Age] pottery dug out of the scarp at z by a friendly rabbit', (whose family still resides there; the burrow appears on plate III as a small white patch). The burrow is in the *south* side of the grassy depression; and this I suggested above might consist largely of

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[6] It may be argued that, as the rampart here has been spread by subsequent cultivation, the layer of chalk lumps which covered the charcoal might not have been strictly *in situ*. To this objection it may be replied that the charcoal layer appears near what *should* be the central part of the spread rampart; for the width of the spread rampart elsewhere, for instance between M and N, is about 100 feet, and the charcoal layer is about 50 feet from the edge of the ditch. Another bit of confirmatory evidence is the presence of the nearly intact skull above the charcoal. This could not have been found in this state if the layer of chalk below had been moved bodily by cultivation (assuming the possibility of this). Mr Farrer evidently regarded the chalk layer as intact, since he concluded, as I do also, that 'Durrington Walls must have been constructed after the date when this [potsherd] was deposited'. (p. 101).

made 'lynchet'-soil. If so[7]—and the suggestion is supported by the presence of rabbits which, as Mr Farrer says, burrow only in chalk rubble—then the sherd has no evidential value. Mr Farrer himself admits that 'the evidence is poor'; but he is tempted to assign Durrington Walls to the Early Iron Age partly on the evidence of this potsherd, and it will not bear the weight.

We are left then with the conclusion that Durrington Walls was made during or after the Beaker period, which is generally regarded as beginning about 1800 B.C. in Britain and lasting for some two or three hundred years at most. Does the evidence of shape and of construction help us to give a closer approximation? There is one point which does, I think, and it is a new one brought out by air-photography—the presence of two, and only two, original entrances facing each other on opposite sides. This is a feature which regularly occurs in circles of a religious character, including perhaps Avebury itself. It occurs in all the circles at Thornbrough and on Hutton Moor, near Ripon, Yorkshire. It occurs at Arbour Low and the Bull Ring in Derbyshire, and at Mayborough near Penrith in Cumberland. All of these too, have the ditch inside the rampart. True, opposed entrances are found also in Iron Age camps, so that too much reliance must not be placed upon this argument; but it is not without force, nevertheless. The interior position of the ditch, and the character of the site, absolutely preclude a defensive purpose. The irregularity of the ditch is another point in favour of a pre-Iron Age date; while its low-lying position and the huge dimensions of both rampart and ditch can be matched at Avebury. Here too, as at Avebury, there are faint indications that the ditch was dug in sections; the course is not regular (like the ditches of disc-barrows or that of Woodhenge), and there are abrupt bends at O and S.

Not one of these points is convincing if taken alone, but they have great cumulative force. Unfortunately we cannot use the evidence of the beaker-man and beaker-sherd, because we do not know how to interpret it; but it is certainly suggestive that the only dateable objects obtained from below the surface should both belong to the same period. Whatever the date may be, my own opinion is that Durrington Walls is a sacred enclosure of the same age and character as Avebury and Marden.

[7] Since writing this I have again visited the site and carefully examined the soil exposed in the burrow, in company with Dr Clay. We both agreed that it consisted entirely of lynchet-soil, so far as it was visible, and the burrow extends for some depth into it. (There seems a doubt as to whether the present tenant is a rabbit or a fox).

Whether it ever had sarsen or wooden uprights we do not know, and air-photography is silent. It is not, however, impossible that ploughing might have so lowered the level of the interior as to remove all traces of holes ; or that an air-photograph has never yet been taken under exactly the right crop-conditions.

In any case excavation is urgently needed, and for once, thanks to Mr Farrer's accurate record, we know exactly where to dig. A trench run parallel to the drain E–F should explain the true character and extent of the charcoal layer, and might bring to light more pottery. It might be prolonged inwards across the ditch, to prove its existence to the sceptical. Excavation should be undertaken before the ground is buried under the Lark Hill refuse-dump ; the object being to determine the existence there of an entrance, and to find out the age of the small enclosure and its relation to the ditch. A trench through the ditch near Z would settle several doubtful points. The small concentric circles at R should not be overlooked ; they probably surround a burial-pit. The proximity of Woodhenge holds out a hope that pottery of the Woodhenge type might be found somewhere with useful associations.

It is to clear the ground for such excavations that the above account has been written.

Nicaea

by D. Talbot Rice

NICAEA is now known to us only as a name, a somewhat illusionary place connected with synods, bishops and councils of the Church and, more usually, with the creed which takes its name from it. But in reality it is more than a name. Some fifty miles from Brusa, or a good day's journey from Constantinople with the aid of all the conveniences of modern travel, what remains of this city that was once so important stands on the borders of the lake of Isnic. To reach it several ranges of hills have to be crossed by the worst of roads, intended only for the old Turkish araba or high carriage but now gaily used by motors and lorries. But the country is delightful and the view from the various foot-hills which surround Mount Olympus is superb. These hills, together with those of a second range further to the north, hem in the lake and so afford a natural protection for the town on its eastern shore, the walls of which can just be distinguished from the hills as brown patches amongst the exuberant green of the coastal fringe.

The walls, which are extremely well preserved and are second only to those of Constantinople in interest and state of completeness, date partly from the Roman and partly from the Byzantine period (plate I). They enclose an area irregular in shape, but roughly about a mile across in each direction. There are four main gates, the two finest of which were built by the Emperor Hadrian. They are known as the Stamboul and the Lefke gates (plate II) and are directed more or less towards the cities with which they originally afforded communication. The roads still pass through them, but much above the level of the ancient streets, for the surfaces have risen with the accumulation of the mud and rubbish of ages.

Within the walls there meets the eye a sight very different from that which would have been presented at the time of one of the great oecumenical councils, when every lodging was full and when the streets were crowded with all the leading clerics of the age. The most notable of all the councils was perhaps that of 325, when the Fathers of the Church met in order to determine the true nature of God and to define

the doctrine of the Trinity. Then the city must have looked like Oxford on the day of Encaenia. Today only a few tumbled houses and the relics of earlier monuments are to be found, huddled together in a small cluster at one side of the enclosed area. The rest is green with cultivation or at a certain season of the year bright red, for the main crop consists of poppies. Here and there a mound or projecting piece of masonry heralds the presence of some buried monument, a sight which fills the archaeologist with the ardour to excavate.

Nicaea was known to ancient history, but there are two diverse accounts of its origin. According to Stephen of Byzantium, a writer and historian, it was colonized by the Bottaei, who called it 'Agkhorae'. But Strabo thinks that it was less ancient and suggests that Antigone, son of Philip, founded it about the year 315 B.C. and called it Antigonia. Shortly afterwards it fell to Lysamachus, who called it Nicaea, after his wife. For some centuries after this the state of Nicaea wavered, for there were continual quarrels with Nicomedia as to which of the two should enjoy the title of metropolis, but the disputes were to some extent ended by Valens, who granted the title to Nicomedia.

But this rebuff to her pride did Nicaea little harm, for Hadrian visited the city about 120 A.D. and expended some energy in construction, both with the intent to beautify and to fortify, and while today Nicomedia (Ismid) is nothing but a Turkish town, with little to show of her former importance, Nicaea is one of the finest walled cities in Anatolia. The excellence of the Emperor's construction at this period is well attested by history, for the two great gates still stand defiant, in spite of quite a number of sieges that they have endured.

Thus in 259 the Scythians captured and ravaged the city, and the result of the ruin that they brought about is still visible today in the broken inscriptions and architectural fragments which were used in rebuilding the walls after their departure. This work of restoration was finished by Claudius, who built the south and west gates in 289.

Nicaea benefited, like most of the Byzantine world, by the prosperity of the sixth century, the age that saw the building of the cathedral of Saint Sophia at Constantinople. In fact Justinian, the greatest builder of Byzantine history, turned his energies to Nicaea, where he not only rebuilt the walls and defences but also turned the temples into churches. A ruined aqueduct which still stands is the most striking witness of his time that remains above ground.

Sometime about 620 the city was made the capital of the Obsequian theme, a large district comprising Cyzicus, Phrygia, Galatia and much

of Bithynia, and it retained this important distinction as long as the districts concerned belonged to Byzantium. But in the eleventh century the Moslem cloud, which had long been gathering in the east, burst with full force under an ambitious leader, Suleiman, who conquered Nicaea in 1074. This was a great blow to the Christians, for the city was one of the most important strongholds against the oncoming Moslem tide, which some four centuries later was to reach Constantinople and shortly after that, even Vienna. With Nicaea fallen it seemed as though the high tide had been reached. But help was to come to the weary Christian of the East from the energetic West, and Godfrey de Bouillon, the great crusading leader, succeeded in recapturing Nicaea in spite of an energetic defence by Sultan Suleiman Kilidj-Arslan, who had repaired the walls the better to resist the attack. In 1106 the Emperor Alexis acquired the much disputed site, only to hand it over to the Seldjouks in order to pacify them while he turned his attention to the defence of his western realm. For the Normans had attacked Dalmatia. So in those days did the Christians of the West help those of the East to resist the Moslem invader. And the Crusaders advanced, lured on by the prospect of sacking the fairest and richest city in the world, Constantinople, rather than by that of rescuing the Holy Land from the hands of the Infidel. A brief lull in hostilities in 1183 enabled Andronic Comnenus, Emperor of Byzantium, to reduce Nicaea as it refused to admit his overlordship, and again the city was an outpost of the declining power of the east Christian empire.

In 1204 the Crusaders achieved their aim, for they succeeded in capturing Constantinople and in sacking it shortly afterwards. Then the importance of Nicaea as a military stronghold was finally put to the test, for Theodore Lascaris had himself crowned there as Emperor of eastern Christendom, in opposition to the Latin rulers of Constantinople, and Nicaea remained the capital city until the Franks were finally driven out, from Thrace in 1230 and from Constantinople about 1260. She remained a city of considerable importance during the early ages of the Palaeologue dynasty and for some hundred years enjoyed a respite from the continual wars and sieges that had stamped her career. But although the lake of Isnic and the deserted walls of Nicaea now appear one of the most peaceful spots on earth, the career of the city has always been a difficult one and she has seen as much terror and bloodshed as any town of the Near East.

By the fourteenth century Moslem power was again on the increase, under an energetic leader, Orkhan. Broussa fell in 1326, Nicaea in

1332 and her old rival Nicomedia in 1337, and this time they were all to remain in Moslem hands. The Christian inhabitants, however, were allowed to retain some of their churches and certain privileges. The name of the city was changed to Isnic, and it became one of the centres of mobilization against the declining Byzantine power. It was hence enriched with two fine mosques (plate III) and at least two baths in the early Turkish period. It was only towards the end of the seventeenth century that Isnic began to fall into a final decline, in favour of her neighbours Broussa and Ismid, for apart from her geographical and military importance the city had in the days of the great Sultans an aesthetic one.

The clays which form the shores of the lake are of exceptional merit for the manufacture of pottery and the Turks, among whom pottery, both in the form of vessels and of tiles, has always been extremely popular, took full advantage of this. At Isnic was established one of the chief potteries of the Turkish Empire and many of the plates which have for long been famous in the West under the name of 'Rhodian', as well as a large quantity of the tiles that are such an essential of Turkish art, were manufactured there.

Though the potteries are the most recent of Nicaea's claims to importance, no traces of them remain today. The buildings of old Byzantine times have survived as a more striking and a more lasting memory of her importance, in spite of the fact that history records that a large number of them had already been laid low by an earthquake in the reign of Constantine Ducas (1059–67).

At the beginning of the war, in addition to the walls and the gates, there were two fine churches and a Roman theatre standing above ground to recall the ancient glory. The theatre is akin to others well known and is hence of no exceptional interest, but it is well preserved and its excavation would probably be repaid. It would be simple, for the overlying débris is not very deep and there are no recent buildings to hamper the work. More interesting, however, are the churches. Agia Sophia still stands, though roofless (plate IV), and in the apses of the side aisles some smoke-blackened frescoes attest its former magnificence. In the main apse, in the nave and in the aisles nothing remains, and there is little chance of finding anything of importance belonging to the Christian period, for during some four centuries the church did duty as a mosque. The minaret, which must have been added sometime in the fourteenth century, can be seen in the photograph. In the church ofAgia Sophia was held the great council of 787, one of the

landmarks in the history of the Christian church, which was called to discuss the question of images and icons and to determine how far reverence of them could be allowed, and here also was finally determined the great iconoclastic struggle which for some centuries divided Church and State.

But more important and more famous was the church of the Assumption of the Virgin (plate v), a domed basilica of the transition period, dating from the early part of the ninth century. Outside it was attractive ; inside it was a marvel, one of the greatest monuments of Byzantine decorative art, containing as it did mosaics of the ninth and eleventh centuries and frescoes of the renaissance period of Byzantine painting. The mosaics were among the finest in existence, those of the narthex being similar in technique to the ones at Daphni, near Athens. All who have seen the Pantocrator in the dome there will realize to how high a level the art of mosaic had risen in the eleventh century and will agree that it is only in a few, mostly rather distant, churches and monasteries of the Levant that the art can really be seen at its best. After Daphni, St. Luke of Stiris and Nicaea, the mosaics of Rome, even those of Ravenna, seem of a minor skill and importance. The frescoes too, though perhaps less well known and less important, than the mosaics, were interesting as representative of a period and style of art of which, alas, too few examples remain.

Among the mosaics perhaps the most striking was the Virgin in the Apse, a fine figure, who holds the Child before her with both hands. The dome probably contained the Pantocrator, but the figure had fallen some time before the war. At its base were the four evangelists, one at each corner. St. Mark (plate vi) is chosen as being the most typical of them and as a fair illustration of the work of the period. The general drawing and shading is no less inspiring than the Apostle's fine, contemplative face.

Amongst the general havoc and ruin of the war this far off church is counted as a victim. The building, which had withstood earthquakes and sieges for some ten hundred years, had survived until 1922 except for the small portion of the dome mentioned above. Then came the exchange of populations and the age of atrocities which brought so much misery to Turkey and Greece. As one of the results of this riot of wildness, war and revolution, the church was wilfully destroyed by means of dynamite, and nothing now remains to mark its site but the bases of the great brick piers and a tumbled heap of broken bricks, blocks of fallen masonry and crumbling mortar. (Plate vii).

The Earliest Christian Churches in England

by C. R. Peers

THE earliest Christian churches of England must have been built 'while the Romans yet dwelt in Britain'. It is quite possible that some remains of them exist, unrecognized by modern eyes, and offering in their arrangements none of the conventions which have since so greatly influenced the development of the church plan. But we have at Silchester the plan of a building which has been claimed as a Christian church, probably of 4th century date, and of it we may say that if it be actually so—a matter which is not capable of definite proof,—it falls well enough into line with later churches of whose nature there can be no doubt. It is a little building with a rectangular nave flanked by side chambers or aisles and preceded by a porch. The nave ends in an apse, in this instance to the west, with transeptal chambers to north and south.

Tradition, as recorded by the Venerable Bede, preserves the record of other and more important Roman Christian churches in Britain. There was one at St. Albans 'of admirable workmanship and worthy of his martyrdom', and Christchurch, Canterbury is mentioned as existing when St. Augustine came, having been made 'of old within the city by the work of Roman believers'. There is certainly no reason why such buildings should not have survived the heathen invasions of the 5th and 6th centuries, even if we make allowance for the natural wish of the missionaries of the Christian revival to connect their work with that of their predecessors in Britain. Nor is it impossible that they had some influence on the form of the churches built by St. Augustine and his followers.

If we ask ourselves whether the Roman manner of building could have been perpetuated by the Britons, the only answer can be that there is no evidence to suggest it, and that the earliest buildings that can be connected with Celtic Christianity are of the simple rectangular form which shows no affinity with classic architecture. So that the churches of the Augustinian mission represent a new start and may be considered as a revival of the classic tradition.

With regard to the most important of them, the Church of St. Peter and St. Paul at Canterbury (fig. 1), we have the statement of Bede that it was begun by King Ethelbert after his conversion, that is to say in the last years of the 6th century, and was not yet finished when St. Augustine died in 604. It was built as the church of a monastery and was further designed to be the burial place of Augustine himself and all the bishops of Canterbury and the kings of Kent. When it was finished, the body of Augustine, which had been buried outside the church, was laid in the

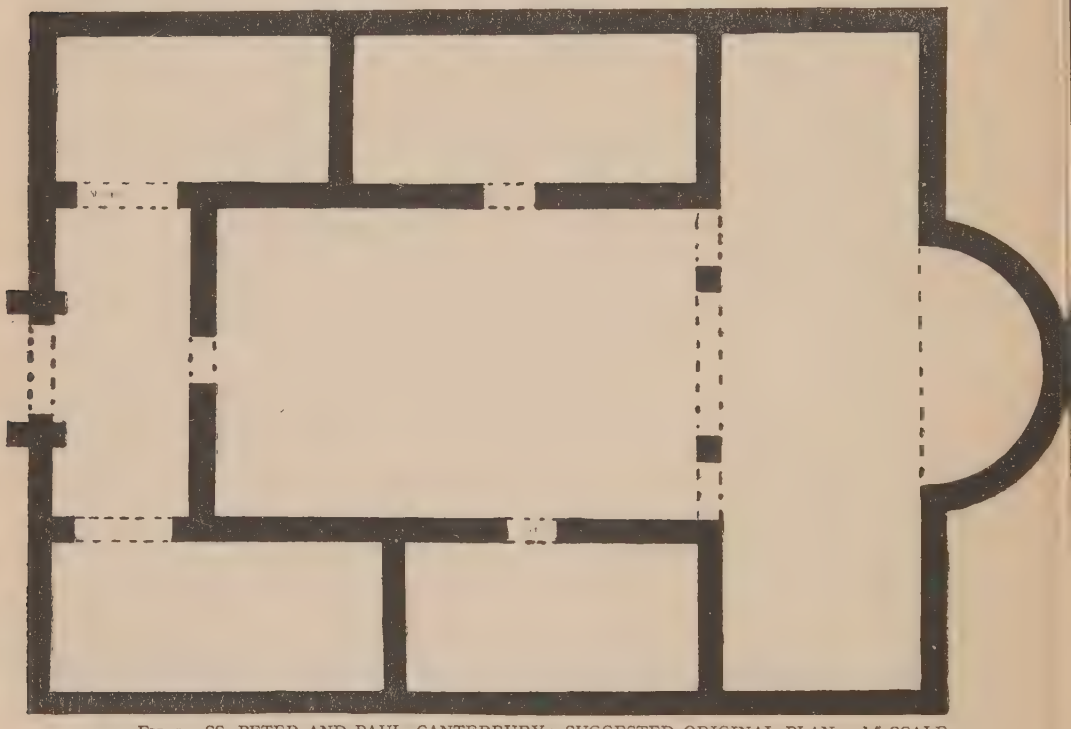

Fig. 1. SS. PETER AND PAUL, CANTERBURY: SUGGESTED ORIGINAL PLAN. $\frac{1}{32}$" SCALE

north porticus ' in which were also buried the bodies of all the succeeding archbishops, except two only, namely Theodore and Berctwald, whose bodies were buried in the church itself because the porticus could not take any more. This porticus has almost in the midst of it an altar dedicated in honour of the blessed Pope Gregory, at which every Saturday their services are solemnly celebrated by a priest of that place '.

This church, with certain alterations and enlargements, stood until the last years of the 11th century, when it was destroyed to

make room for the Norman church whose remains are to be seen today. A detailed account of its destruction is extant, and is so precise that when excavations were undertaken in the nave of the church, the remains of buildings which were found underneath the 11th century levels were at once recognized as belonging to St. Augustine's church, without any possibility of doubt. Here then were the remains of a church begun at the end of the 6th century and finished early in the 7th, a document of first-rate importance in itself, and for its bearing on other buildings to which early traditions attached. Its plan can be described in words practically identical with the description of the late Roman building at Silchester. It had a rectangular nave flanked by side chambers and preceded by a porch or narthex, and may be assumed to have ended eastward with an apse flanked by transepts, although all the east end of the building was removed in the middle of the 11th century to make room for the octagon built by Abbot Wulfric. It has thin walls built entirely of Roman brick and plastered on both faces. Its side walls and part of the side chambers are obliterated by the sleeper walls of the Norman church, but their position can be recovered with certainty, and in the north porticus, where the archbishops of Canterbury were buried, three tombs remain against the north wall, and can be identified as those of the archbishops Laurentius, Mellitus and Justus. The original floor, of which a good deal remains, was of plaster coloured red by an admixture of pounded brick, on a layer some ten inches thick of flints set in mortar. The scale of the building was small, the nave being some 40 feet long by 27 wide, and the side chambers 12 feet wide. The nave must have been lighted by windows high in the wall above the roofs of porch and side chambers, and between nave and apse were probably three plain semi-circular arches in a row. We may imagine painted decoration on the plastered walls, an altar with a ciborium, and low screens for the quire, in this earliest of all Benedictine churches in England.

The connexion of St. Martin's church at Canterbury (fig. 2) with Augustine's mission makes the early work still standing there of much significance. Bede's History relates that this church was given by King Ethelbert to his queen Bertha at her marriage. She was a daughter of Charibert, king of Paris, and a Christian, and brought with her to Kent a Christian bishop, Luidhard. St. Martin's church was given to them ; the suggestion is that it had been in existence for some time, and Bede says that it was built of old while the Romans still occupied Britain. As it exists today it shows two periods of early work, in the

nave and in the western part of the chancel, the latter being demonstrably the older of the two. Its walls are thin and built of Roman brick ; the rectangular nave to which they belonged was 14 feet wide, but neither its east nor west end remains. In its south wall is a lintelled opening 3.6 feet wide, which gave access to a small square chamber now destroyed. To the west of this building, and overlapping it to some extent, the present nave of St. Martin's was built, at a date which may well fall within the 7th or 8th centuries. It is 38 feet by 24 feet within the walls, which are thin and built of ragstone and chalk with pairs of buttresses at the four angles and single buttresses midway in the north and south walls. Roman brick is used only in the heads of

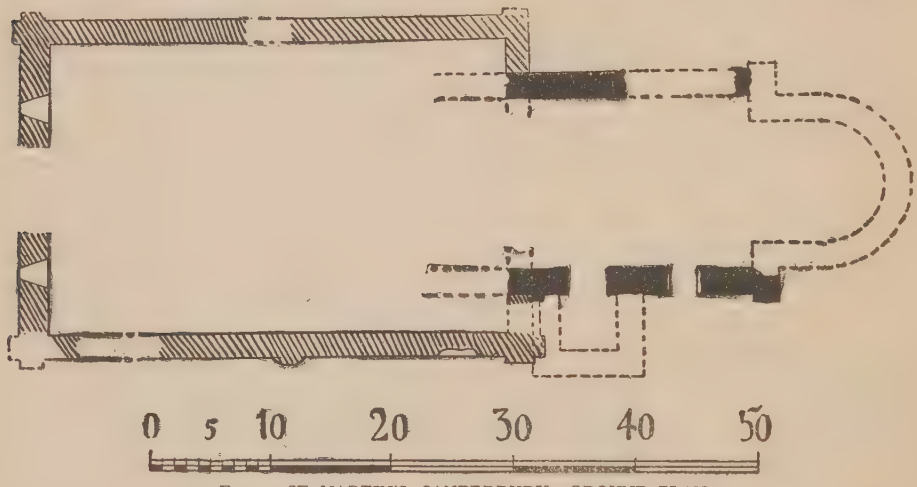

FIG. 2. ST. MARTIN'S, CANTERBURY: GROUND PLAN

the buttresses and sparingly as bonding courses in the walls. Traces of a plaster floor like that at St. Peter and St. Paul's church are recorded to have been found in the chamber south of the chancel.

Due east of St. Peter and St. Paul's church, and between it and St. Martin's, is the church of St. Pancras (fig. 3). Its details clearly show its connexion with its neighbours, but there is no early mention of it. In Thorn's Chronicle of the 14th century is a story that it was a pagan temple used by King Ethelbert, and that St. Augustine celebrated in it his first mass in Britain. This is only valuable as showing that its early date was recognized at the time when the Chronicle was written. It has thin walls of Roman brick, a rectangular nave 42 feet by 26 feet 6 inches, pairs of buttresses at the western angles and remains of a

floor of pink plaster. Doorways midway in its north and south walls opened to chambers like that on the south side of St. Martin's, and there was a west porch whose north wall is fortunately standing, having been incorporated in a boundary wall. At the east end of the nave was a screen of four Roman columns, the middle pair carrying a brick arch

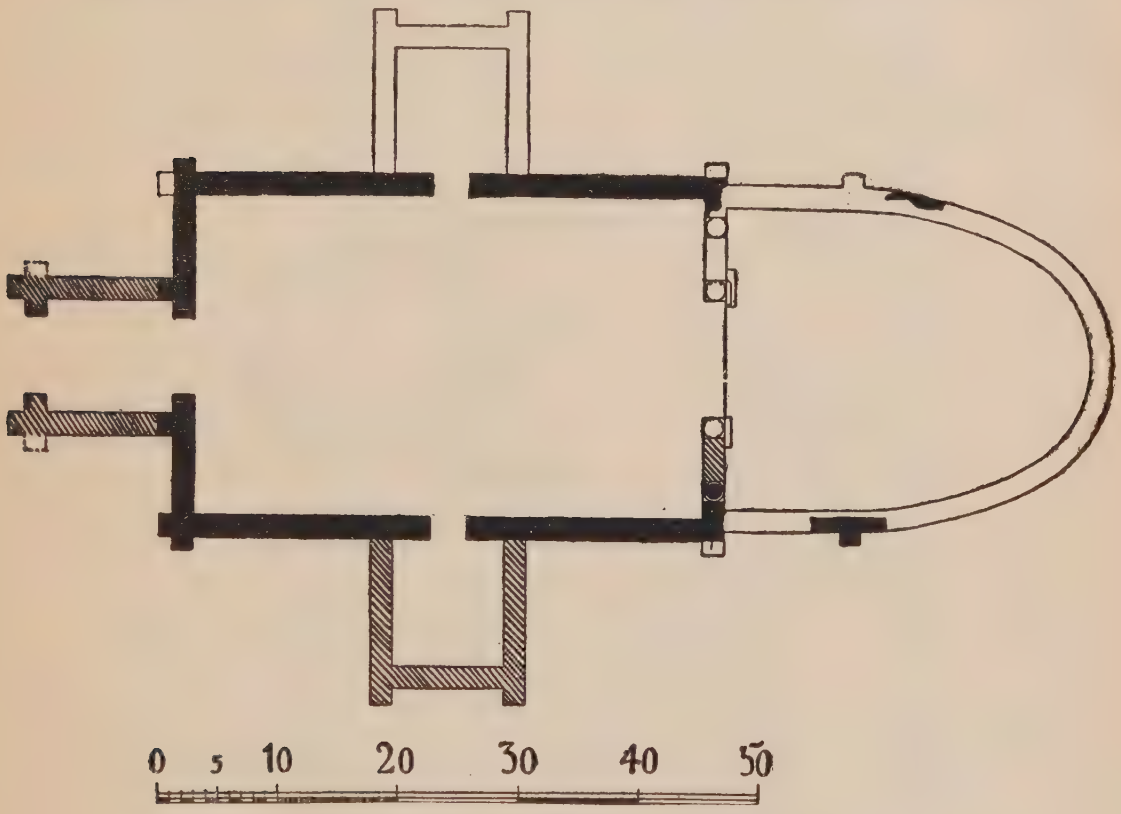

Fig. 3. ST. PANCRAS, CANTERBURY: GROUND PLAN

of 9 feet span, while the side openings, which were only 4 feet wide, may have had stone lintels. The plan of the chancel is uncertain, but its width seems to have been 25 feet.

Immediately to the east of St. Peter and St. Paul's church there was built by King Edbald of Kent, about 620, the church of St. Mary. Only the base of its west wall now remains, showing that like the rest it had thin walls of Roman brick ; its nave was 22 feet 6 inches wide, and had

a western doorway, and from the references to it in the record of St. Augustine it is clear that, like the church of St. Peter and St. Paul, it had side chambers and a western narthex.

These four Canterbury churches, then, may be used with some confidence as examples of late 6th or early 7th century plans. It would seem that St. Martin's should contain the earliest work. St. Peter and St. Paul's was begun about 598, and St. Mary's about 620. St. Pancras's shows affinities both with St. Martin's and with St. Peter and St. Paul's, and can hardly be far removed in point of time. It is set out on the same east and west bearing as the two to the west of it, an arrangement

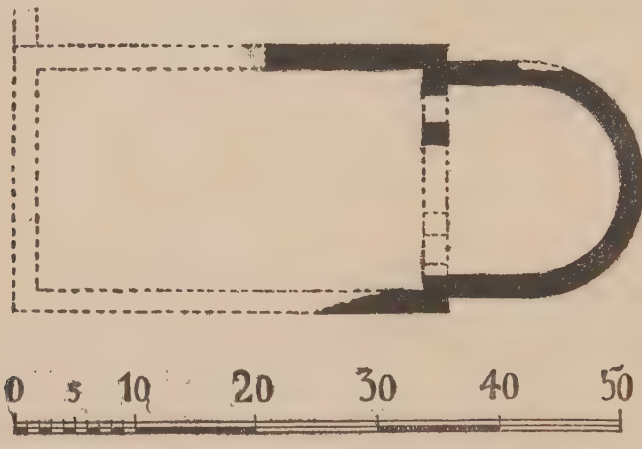

Fig. 4. ST. MARY, LYMINGE: GROUND PLAN

which occurs on other Saxon sites, and it may perhaps be argued that as St. Mary's was added to the east of St. Peter and St. Paul's, so the building of St. Pancras's follows that of St. Mary's.

If we are to look for other churches of this type, we may find an example at Lyminge (fig. 4), some ten miles south of Canterbury. Here in 633 the widowed Queen Ethelburga, sister of King Edbald of Kent, founded a monastery, and in 647 was buried in the north porticus of the church she had built there. There are in the churchyard at Lyminge, to the south of the parish church, the foundations of a small church with an eastern apse and rectangular nave, built of Roman brick, with some evidence of chambers to the north and south of the east end of the nave, and overlapping the apse. The opening between nave and apse seems to have been divided into three, and the general arrangements

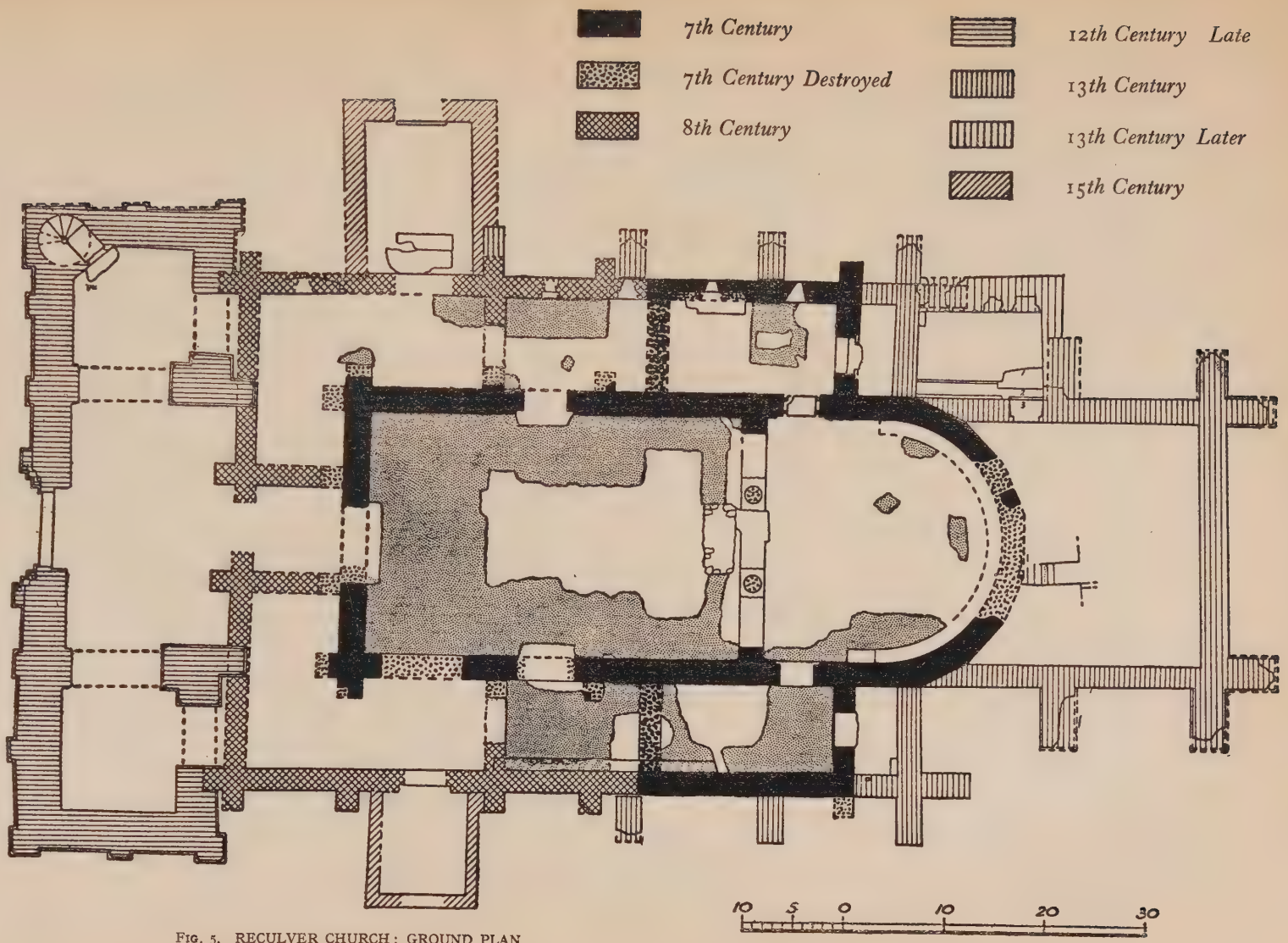

FIG. 5. RECULVER CHURCH: GROUND PLAN

have so much in common with the Canterbury churches, that a date in the second quarter of the 7th century may be not unreasonably claimed for them.

In 669 a monastery was founded in the Roman fortress at Reculver, as the Anglo-Saxon Chronicle records. The site of the parish church at Reculver (fig. 5) has recently been cleared, with the result that the complete plan of an early church, with additions which must themselves be of early date, has been recovered. It is clearly of the same type as those already mentioned, but some 50 years later, we may suppose, than the latest of the Canterbury group. It has a nave 37 feet by 24 feet, opening to an apsidal chancel of equal width and 23 feet 6 inches deep. The apse was polygonal outside and semi-circular within. Its discovery is of particular importance, since in no other of these early churches is the apse preserved, except at Lyminge, and it is further to be noted that the polygonal outline is only developed at Reculver at or about the original ground level, so that had the foundation only remained, there would have been no reason to assume a polygonal form. The nave was divided from the chancel by a screen of three semi-circular brick arches, with stone columns which were removed at the destruction of the church about 1810 and are now to be seen in the infirmary cloister at Canterbury cathedral. North-east and south-east of the nave, and overlapping its junction with the chancel, were oblong chambers 9 feet wide by 17 feet long, with doorways to the chancel and external doorways in their eastern walls. The nave had pairs of buttresses at its western angles, and north, south and east doorways each flanked by two buttresses. The chambers had buttresses at NE and SE but none at their western angles. There were considerable remains of a floor of pink plaster in all parts of the building, and round the inner face of the apse there had been a low bench of masonry. This building was enlarged, probably at no great distance of time from its completion, by the addition of chambers at north and south, carrying on the line of the original chambers, and on the west, with a porch over the west door of the nave. The additions had plaster floors like the rest and a similar buttress system. The resemblance in plan between the nave of Reculver and that of St. Augustine's church of St. Peter and St. Paul is very striking. But the closest parallel, apart from the additions, is to be seen in the early church at Bradwell on Sea, Essex, the nave of which is in a more perfect state than any other which can claim to belong to the type with which we are dealing. St. Cedd, being on a mission in Essex in 653, is said to have built churches, among other places, at Tilbury and

Ythanchester, the latter place being the Roman coast fortress Othonae at the mouth of the Blackwater. Across the wall of this fortress the old church of Bradwell-on-Sea (fig. 6) is built, with material taken from it. It has a nave 21 feet 6 inches wide by 49 feet long, its walls standing to their original height of 23 feet. It had a west door and porch, and possibly north and south doors. At the east was a screen of three or perhaps only two brick arches on brick piers, opening to an apsidal chancel, and there were chambers north and south of the junction of nave and chancel. There are pairs of buttresses at the western angles of the nave, and traces of buttresses in the north and south walls. The heads

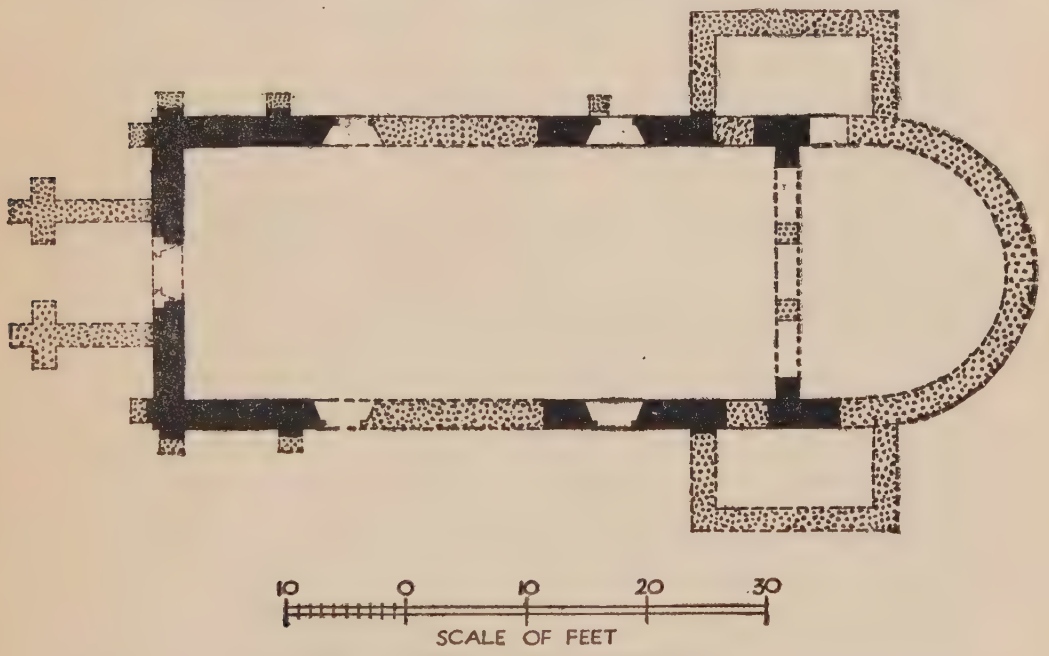

Fig. 6. BRADWELL-ON-SEA: GROUND PLAN

of the buttresses are built in Roman brick, the rest of the walling in roughly squared and coursed stone, and the quoins at the western angles of the nave are in large stones, with lewis-holes in them. The Roman building from which they came must have been of some importance.

It seems fair to say that all these seven churches must have been in existence before the end of the 7th century, and the relationship between their plans is obvious. Of their architectural details there

is, naturally, far less to be said. But in the first place it is certain that they are not the work of beginners, of unskilled men, and materials and workmanship are excellent. We are, however, at a loss for detail in nearly every case. There is the notable exception of the stone columns from Reculver, now at Canterbury. With the capitals and bases they stand nearly 15 feet high : the bases are of Ionic profile, a little clumsy in the working, and ornamented with key and cable patterns as no classic base would be. The capitals are definitely awkward ; the designer's device for changing from the circular plan to the square showing a lack of experience, while the neck-moulding is too heavy. But the work is anything but barbarous. There are two Corinthian capitals at St. Augustine's, Canterbury, found in one of the boundary walls and probably belonging to one of the early churches, which in spite of their more ambitious design are far nearer the barbaric. For the rest it can only be noted that the original windows at Reculver, and those of the later additions, were narrow, with brick quoins and a single splay through the wall. They probably had round heads, but none has been preserved. At Bradwell the west window of the nave is round-headed and of a fair width : the side windows, set high in the wall, had wooden lintels, and were square-headed, being presumably filled in with pierced boards, such as were called *transennae*. The plaster floors, coloured with pounded brick, seem characteristic, and in the church lately discovered at Glastonbury and thought to be the work of King Ina in the opening years of the 8th century, a similar floor has been exposed. Speaking generally it may be said that the builders of these churches drew on Roman materials for their constructions : the oldest of them are built entirely of Roman brick, the later of stone with brick for dressings and coursing. This would be only a question of supply ; we have no reason to suppose that the Saxon builders made bricks, and when materials from Roman buildings became scarce, stone was used to supply deficiencies. At St. Pancras's church the remaining column base is Roman work re-used. At Reculver the builders have had to make their own capitals and bases, in default of Roman material. But these churches contain the germ of the English pre-Conquest school of building, and as such are worthy of careful study, especially as they have one merit which is so often lacking in later Saxon buildings, that their approximate dates are hardly in doubt.

Stonehenge

by R. S. Newall

JOHN WEBB, in his preface to Inigo Jones's posthumously published *Stonehenge*, in 1655 says: 'This discourse of Stonehenge is moulded off and cast into a rude Form, from some few indigested notes after the late judicious Architect, the Vitruvius of his Age, Inigo Jones'. Upon these notes, Webb undoubtedly dined not wisely but too well and I trust I shall not be accused of doing the same with Colonel Hawley's many and well digested notes. I have one advantage over Webb in that I have seen Stonehenge, and I very much doubt whether he had.

In describing the stones, I shall begin at the centre and work outwards, taking as centre the point where a line drawn from stone 91 just inside the bank to stone 93, and a line from hole 92 in the middle of the supposed barrow to hole 94 in a similar barrow in the NW quadrant, cut each other and the axis of Stonehenge. It is from this point as centre that all the black circles on the plan are drawn. The axis is a line through the centre, which divides the stones and earthworks into two equal parts.

The stones already mentioned are as follows. No. 91 is a rough, somewhat pointed stone, now leaning outwards. No. 93 is much smaller and is dressed on all four sides. Both of them lie 140 feet from the centre. Hole 92 was dug into by Hoare; he found nothing there, but mentions finding a cremation burial in hole 94. It is, however, more probable that he dug out 'Aubrey' hole 46, as will be shown later.

These four points could not have been exactly fixed after Stonehenge was standing, but their intimate connexion with the plan of the monument suggests that they were fixed just before its erection. The only other stone circle that has outlying stones, other than an avenue, is Turusachan, Callernish, but there the stones are in a different position as regards the avenue and the north.

The centre of the circle having been defined, the next stone to be considered is no. 80 (red, stippled), which is 16 feet long by 3 feet 4 inches wide and 1 foot 9 inches thick, and is at present pressed into the ground

by the weight of stones 55 and 156, which have fallen on the top of it. This is the only piece of micaceous sandstone at Stonehenge and fragments of it are rare. Its original position is uncertain, but it is more than probable that it does not now stand in it. The northern end is more or less pointed, the southern has been dressed flat. In nearly every case where the base of a stone is exposed, it is found to be naturally pointed and left undressed. A pointed base would be helpful in raising a stone to the perpendicular, for it could be inclined one way or another more easily than if the base were flat. To flatten a pointed base would also reduce the height of the stone, and the intention of the builders seems to have been to get the greatest possible height out of the material. If, however, stone 80 did stand upright in a position on the axis, it must have fallen in such a way that the middle of it lies directly over its hole ; and if, on the other hand, it stood in a hole somewhere near the present position of the base, that is, off the axis, one would expect to find its pair.

Outside stone 80 lies the horse-shoe of blue stones (blue), nos. 61 to 72, some of which stand on the arc of a circle with a radius of 19 feet. They are all of spotted dolerite, and increase in height from no. 61, which is now 5 feet 6 inches but must have been a little more originally, to over 8 feet where they stand near the axis. Stone 67, which stands on the axis, would seem to render useless any viewpoint behind it. All these stones are very carefully dressed and taper gradually from the ground to the flat top. No. 68 differs from the others in having a shallow vertical groove on its northern side, but this is due to the stone having been dressed by cutting a groove and then pounding down the ridges, as is shown on the outside face of no. 59. It has been suggested that this horse-shoe was originally an oval, but there do not seem to be enough holes on the northeast side.

The five big trilithons nos. 51–60 (pink) are the most impressive stones here, but, though large, they are not nearly so large as some stones moved by prehistoric men. The broken menhir at the end of the long barrow, called Er-Grah, at Locmariaquer in Brittany has a total length of 67 feet, whereas the largest stone at Stonehenge, no. 56, is only 29 feet 8 inches, of which 8 feet are below ground. The trilithons increase in height towards the centre: 51 and 52 are 16 feet 6 inches in height, 53 and 54 (plate I) are 17 feet 9 inches, and 55 and 56 are 22 feet. The last mentioned stones were probably the first to be erected. When no. 56 was raised upright from a leaning position in 1901, it was discovered that it had been run down an incline cut in

the chalk to the bottom of its hole from the inside of the circle, thus proving that the blue stones were erected afterwards, for they stand over this incline and it would be impossible to erect the big sarsens once they were standing there. Another point of interest in connexion with these two stones is, that although no. 56 has 8 feet below ground, its fellow (55) can only have had about 4 feet covered. The greatest height was wanted here, and in order to get that height out of no. 55, which is nearly 4 feet shorter than no. 56, the part below ground level was not dressed but was left nearly twice as thick as the upper portion, in order to give it a broad, firm base.

The lintels of these trilithons are very carefully cut to a curve on both the inner and the outer sides, and they are about 6 inches wider on their upper surface than on their lower, so that they should not give a tapering effect when seen from below. Their average measurements are 16 feet long, $4\frac{1}{2}$ to 4 feet wide and $3\frac{1}{2}$ feet thick. The very even height at the top of each pair of uprights is noticeable. It would be impossible to place pairs of stones so exactly, however carefully their length and the depth of the holes were measured, because the crushing effect of their weight on the chalk would be an unknown factor. In practice, however, this difficulty could easily be met by erecting the stones and letting them settle in their holes and then seeing how much had to be cut off the top and how much had to be left for the tenons which fit into the mortise holes at each end of the lintel. This use of mortise and tenon for jointing stone seems to be unique, being a method usually only used for jointing wood. It can have had little holding power here, for in the cases where it can be examined *in situ*, as for instance on stone 52, there is a space between the joints large enough for a jackdaw's nest.

Outside the big trilithons is the circle of blue stones, 31 to 49 and 150, with a radius of 39 feet. The stones vary in height, shape and material ; besides 16 spotted dolerites there are four rhyolites and four volcanic ash stumps broken off below ground level. Although this is the least accurately placed of the circles, it must have been pegged out on the ground when the rest of the structure was planned, for no circle could be drawn once the five trilithons were standing. The inaccuracy can partly be accounted for by the fact that the stones were erected after all the sarsens were in position. That this was the order of erection is proved by the fact that no chips of the blue stones have been found in any of the holes of the sarsens which have been excavated.

It is the blue stones which give us some little evidence as to when Stonehenge was built. Dr Thomas has shown (*Antiquaries Journal*, III, 239) that these stones came originally from the Prescelly Hills in Pembrokeshire. It is almost inconceivable that rough undressed stones should have been brought a distance of 145 miles in a straight line overland, or round the coast by water and up the Salisbury Avon, when plenty of stone of other kinds could be obtained quite close at hand. The problem is partly solved by stone 150. This now lies pointing inwards, but if it were set upright on its present NE end it would fit exactly into the circle of blue stones, and there can be little doubt that this was its original position. It is the only one of the blue stones known to have mortise holes in it, and when it stood upright it was so placed that these holes were on the outside. Now a universal feature of Stonehenge is that the best face of a stone is always on the inside. Therefore, it may be safely said that some form of megalithic monument composed of Prescelly blue stones and having at least one trilithon was brought from some place unknown and incorporated into Stonehenge after the sarsens had been erected, and that stone 150, originally part of a trilithon, was then used as one of the uprights of the circle of blue stones. The stones of this circle are a rather uneven lot. Nos. 49 and 31, on either side of the axis, are intentionally a little nearer in than the others. Nos. 46 and 48 are rhyolites and have 38 and 40, the only other rhyolites, almost diametrically opposite them, which is curious. In fact, most of the stones in this circle have a stone diametrically opposite them, which shows that the circle is more complete than one would imagine from looking at it, for it is not likely that in every case pairs of diametrically opposed stones would have been destroyed. Another interesting point is that at present there is no evidence of any of the stones in this circle having stood at the four cardinal points of the compass.

Blue stone fragments have been found in other parts of Wiltshire, the two best instances being at Boles Barrow (a long barrow at Heytesbury) and in a round barrow near Stonehenge. William Cunnington, writing to H. P. Wyndham in 1801 (*Wilts. Archaeological Mag.* XLII, 432), after describing the big sarsen stones weighing from 28 to 200 lbs. each and forming a ridge down the middle of Boles Barrow, adds a note: 'Since writing the above I discover among them the Blue hard Stone also, ye same to some of the upright Stones in ye inner Circle at Stonehenge'. This definitely proves the presence of blue stones in Neolithic times in Wiltshire, but not necessarily at Stonehenge.

It is more likely that the blue stone in Boles Barrow is connected with the megalithic monument of which stone 150 in Stonehenge was originally a part. The second instance occurs in Hoare's *Ancient Wilts*, I, 127, though the admissibility of this as evidence of blue stones occurring in a round barrow has been disputed. The barrow in question was 76 feet in diameter and 3 feet high. Hoare suggests that it had been opened earlier by Stukeley, and goes on to say : ' We observed a heap of white soil which having removed we came to the primary interment of burned bones within a fine circular cist and found a spearhead of brass (bronze dagger) in fine preservation and a pin of the same metal (bronze awl). It is somewhat singular that these burned bones, a more than usual quantity, should have been unmolested in a barrow where there were a hundred rabbit holes. On removing the earth from the cist, we found a large piece of one of the blue stones of Stonehenge. In opening a fine bell-shaped barrow NE of Stonehenge, we also found one or two pieces of the chippings of these stones '. It is evident that Hoare thought that the blue stone chips were contemporary with the primary interment, and that Stonehenge must, therefore, have been built before this barrow.

The last circle of stones is composed of thirty dressed sarsens, nos. 1 to 30 (pink), with a continuous ring of sarsen lintels, a unique feature in stone circles. Each upright sarsen has at the top two tenons to fit into the mortise holes at the end of each lintel where they meet each other on the top of the upright. The levelling of the tops of sarsen uprights was mentioned in connexion with the five trilithons, and there is further evidence for it here. A very large number of hammerstone chips, mostly flint, were found just below ground level around the inside faces of stones 29, 30, 1 and 2. These splinters and chips were evidently knocked off the hammerstones in reducing the height of the sarsens and cutting the tenons. They were found on the inside because the lintels must of necessity have been put up from the outside of the circle, probably by rolling them up an inclined plane of earth and wood, and when this was removed the hammerstone chips which had fallen on the outside would have been removed also. The lintels are further secured by their ends being toggle—or fishtail—jointed to each other. They are cut out on the arc of a circle to fit the circle of radius 49 feet on which the uprights stand. One of the lintels, that resting on stones 1 and 30, was thicker than the others and in order to make it level at the top with the others the seating at each end was reduced by a few inches.

The uprights of this circle have been proved by excavation to have been erected from the outside by sliding them down an inclined plane to the bottom of the hole and then pulling or levering them upright. Once they were upright, there seems to have been feverish haste to keep them so by throwing packing blocks into the space between the stone and the chalk walls of the hole. In some cases, large sarsen mauls were used for this purpose, also rough sarsen blocks, pieces of Chilmark limestone, and, more rarely, blocks of green sandstone. The last two are interesting as showing that stone was obtainable nearer than the sarsens. Chilmark or Teffont, the nearest sources of supply for this material, are only eight miles away, whereas the Marlborough Downs, the presumed source of supply of the sarsens, are about eighteen miles from Stonehenge.

The Z and Y circles of holes (green) must now be considered, and may be taken together. These holes are oblong in shape with sides and ends sloping outwards; taking Z3 as a fair example they measure 33 inches deep, 70 inches long and 56 inches wide at the top, and 42 inches long and 28 inches wide at the bottom. The filling is of a redder shade than the earth in any of the other holes here. A glance at the plan will show that these circles differ from all the others in their irregularity, and this shows that they were not pegged or marked from the common centre, which would be an impossibility once the stones were standing. They are moderately exact in their radial position, the radius being 64 feet for Z1 and 90 feet for Y1, but there is a tendency to pairing on the south-west, and there seems to be a break in the continuity at Y8. Evidence of their lateness is given by the fact that they are the only holes which contain fragments of the blue stone on the bottom; there is no Z8, stone 8 having evidently fallen before they were dug. Another proof that they were dug after the erection of the sarsen circle is afforded by the fact that the filled-up incline to stone 7 was cut into by hole Z7. Apparently the only case in which anything had been intentionally buried in one of these holes was in Y30, where five red-deer antlers were found carefully laid on the bottom. Though no date or period can be deduced from these, it may be noted that they were rather less robust than those found in the bottom of the ditch. Fragments of pottery of every kind from the beaker onwards were found in these holes, but in no stratified layers, and it can be safely said that they had fallen in with the earth, seeing that there was similar pottery all round the area in which they were dug. It is only in an instance like Y11, where 104 pieces of Early Iron Age pottery were found on an

ashy layer or hearth at 15 inches below the ground level, or 24 where 52 pieces of a bead-rim pot were found at 20 inches down, that any suggestion can be made as to date ; and one is inclined to think that if Druids ever had any connexion with Stonehenge it was here that they may have put up some addition, to augment or bolster up their hocus-pocus at a monument whose use, in their time, would long have been forgotten.

The ' Aubrey ' holes, bank and ditch (orange) may be taken together. It is unfortunate that the crest of the bank is not shown on the plan, but it will be found to be just outside the ditch of the ' barrow ' 92, or 161 feet from the ' Aubrey ' holes centre. The bank was, of course, discontinued at the main causeway entrance and was probably not its full height at either of the two other causeways, to the north and south ; here what bank there was would soon have been worn away by modern cart-tracks. It is also unfortunate that hardly any excavations were made in the bank. Two were begun, and soft ground was found outside ' Aubrey ' holes 2 and 7, but owing to the lateness of the season there was not time to finish them.

The extreme irregularity of the ditch is a striking feature. It appears to have been made by digging round holes (as outside ' Aubrey ' holes 24, 25, 26) and afterwards cutting away the divisions between them. A large number (about eighty) of deer antlers, mostly picks, were found lying on or near the bottom, as though left there at the end of a day's work, and there is reason to believe that this ditch was never finished and left open. In fact, there must always have been enough loose chalk rubble lying in it to hide the picks, or one would suppose that they would have been taken away and used for some other purpose. There was no evidence of occupation at the bottom, only four very small pieces of pottery being found there. Flint flakes were numerous, many made no doubt in cutting through natural layers of flint in the chalk, or in whittling a flint in an idle moment. Two small Cissbury-type celts were found, but implements were extremely rare, unless the chipped lumps or rough cores can be called implements. The whole ditch resembled a quarry whence chalk blocks were obtained for building the bank. Rather more than two thirds of the ditch was filled with the chalk rubble containing the objects mentioned above, and part no doubt had been frosted in from the sides and from the bank. The blue stone chips were rarely found more than a few inches down in this rubble. On top of this was found pottery of all dates from the beaker to the present day, a large sarsen maul like those used for dressing stone, a barbed

and tanged flint arrowhead lying next one of iron and blue stone axes ; in fact a similar collection to that found amongst the stones.

To return to the ' Aubrey ' holes ;—they are so called because John Aubrey, F.R.S., in his plan of 1666* (which seems mainly based on Inigo Jones's plan) shows holes in this position. It is curious that some of the holes were visible as small depressions at that date whereas there is no surface evidence of them today. It may have been a dry summer when he saw them, or the turf may have been eaten off by sheep. The holes are circular, their inner edges being more sloping than the outer, and they vary in size from a depth of 24 inches and a diameter of 30 inches to a depth of 41 inches and a diameter of 45 inches. If, as seems probable, they are spaced out evenly on the circle, there should be 56 of them, of which 32 have been excavated. If a diameter (orange) is drawn through the space between nos. 55 and 56 and through that between nos. 27 and 28, and produced north-eastwards, it will be found to correspond with the middle of the main causeway entrance of Stonehenge more closely than the axis does. Also, if a circle is drawn (orange) with its centre on this diameter, $3\frac{1}{2}$ feet south-west from the centre of Stonehenge, with a radius of 144 feet, it will be found to fit the ' Aubrey ' holes better than the circle (black) from the Stonehenge centre, the greatest difference being 5 feet.

The ditch of the ' barrow ' 92 is not only cut in the bank of Stonehenge but cuts through ' Aubrey ' hole 19, and the ' barrow ' itself covers holes 17 and 18, showing that it is later than the ' Aubrey ' holes and the bank. Its intimate connexion with the stones has already been shown.

The exactness of the coincidence of the ' Aubrey ' holes with the orange circle would be impossible unless the circle had been described from the ' Aubrey ' centre by the peg-and-string method before the stones were standing. If any reliance can be placed in the plotting of those holes not yet excavated, stone 93 would stand almost in ' Aubrey ' hole 39, and will require the most careful sectional excavation at a future date. In the same way, ' barrow ' 94 should be found to cover three or more ' Aubrey ' holes. It will be remembered that Hoare, digging here early in the 19th century, says that he found a cremation burial in the middle of this ' barrow ', but it is more than likely that he dug into ' Aubrey ' hole 46.

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* In his *Monumenta Britannica* (manuscript, unpublished, in the Bodleian Library, Oxford).

As to the contents and use of the ' Aubrey ' holes, twenty-three out of the thirty-two excavated contained a cremation or part of a cremation. In very few instances was the cremation in a compact mass, but in nearly every case it seems to have been placed on the side of the hole near the top and to have dribbled down to the bottom; in no case did blue stone or sarsen chips go down to the bottom, though sometimes they are deep in the hole. These points, together with the lower filling of the ditch and the position of the ' Aubrey ' holes, are very strong evidence for assuming that the holes, the ditch and, necessarily, the bank are earlier than Stonehenge.

In order to determine the purpose of the holes, let us take a typical example, no. 9. The depth of this hole is 41 inches. Down to a level of 28 inches below the turf there were found 32 sarsen chips, 56 quartzite chips from hammerstones, and 51 blue stone chips. Signs of cremation were met at 10 inches below the turf, and wood-ash was encountered at 24 inches down on the inner side, continuing in a downward slope to the opposite side and the bottom. The cremation was diffused among the wood-ash. This was a large hole with more or less vertical sides ; it was filled with earthy chalk rubble, there was white chalk rubble on the inner side under the wood-ash, and a certain amount, as is usual, on the opposite side. A peculiarity was the depth to which the brown earth had penetrated and the finding of stone chips of all sorts at a greater depth than usual.

If these holes had been dug as cists for cremation burials, the burnt bones would not have been in this scattered state ; if they had contained stones one might reasonably expect a few packing blocks ; also, it might be easy to get a stone into a hole 41 inches deep and 45 inches across, but to get it out would entail the clearing of all the material between it and the side of the hole, and perhaps cutting down one side of the hole, which would scatter the cremation still more, supposing that it had been placed at the side of the hole against the stone. If, however, a wooden post stood there, its gradual decay would cause the cremation to dribble down, and stones and earth at the top would fall in and generally reproduce the description of the hole given above.

The causeway must of necessity be as old as the ditch, and undoubtedly the post-holes (orange) on it formed a barrier to block the entrance. It has been shown that the causeway corresponds better with the 'Aubrey' circle diameter than with the axis of Stonehenge, but the Axis is central to the avenue ditches (pink) and the avenue banks, so

that the avenue appears to belong to Stonehenge and not to the 'Aubrey' circle.

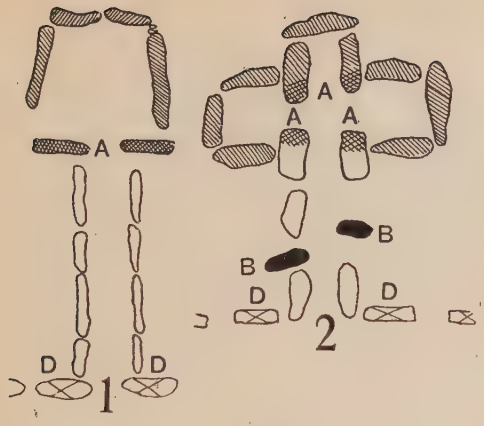
Two stones remain to be described. No. 95 is a well worked stone, 21 feet 6 inches long, 6 feet 9 inches wide and 2 feet 9 inches thick. The top end, which lies towards the south-west, is dressed flat. The other end, which lies towards the north-east, is about 154 feet from the centre, and to the north of it is a hole, 10 feet in diameter and 6½ feet deep, in the bottom of which was found a large flake of sarsen. On the north side of this hole there was the impression of a stone on the rammed chalk which must have filled the hole between the edge and the stone. There is no doubt that this hole once held an upright stone, and considering the symmetrical arrangement of the stones already described, it may be fairly assumed that no. 95 formerly stood upright on its north-east end, thus making a pair. No hole was found for it, but there was a cutting in the chalk about 4 feet deep all round the stone: if this represented the depth of its original hole, it would leave 17 feet 6 inches of it above ground, in which case the total height of its fellow would have been 24 feet. This would be a similar case to that of stones 55 and 56, where the necessary height was obtained at the expense of the foundations of the shorter stone.

The last stone, 96 (about 256 feet from the centre), is a rough naturally pointed stone and bears little or no trace of dressing. A ditch where necessary, so far as it has been excavated, seems to surround it. A fellow stone on the other side of the axis is to be expected, although the ditch rather negatives the idea of there being two stones, unless it took the form of a figure 8. Another reason for there having been two stones will be given.

The Stonehenge end of the avenue has been mentioned; it contains various holes for which it is impossible to suggest a use. The discovery of its continuation beyond the Old and New King Barrows is one of the wonders of air-photography of which the Editor of ANTIQUITY should be justly proud.*

As to the origin and purpose of Stonehenge, it has been shown that it is of two periods. The earlier, the 'Aubrey' circle, can be compared with Avebury, the Ring of Brogar, Stennis or other circles where there is, or was, something in the middle, though in the present instance all trace of the central object has been obliterated by the erection of the big stones. If a collection of drawings of stone circles be made, it will

* For this, see ANTIQUITY, I, 342, and the *Antiquaries Journal*, IV, 57, and *Air Survey and Archaeology*, 2nd edition, 1928 (Ordnance Survey Office).


A
D
1
A
B
D
2
A
B
D
3
A
B
D
4
C
A
B
D
5
C
A
B
D
6
A Transept Entrance
A ditto
Walls of Transept
Walls of Passage
B Stones at Right-angles to Passage
C Inner Peristaliths
D Outer ditto
B B
B B
7

be found that stones on a circle, called peristaliths, can vary in height from 13 feet to a few inches, and as much in diameter. If Avebury be taken as one extreme, a barrow on Dunstable Downs, in which a circle of fossil urchins was found, can be taken as the other, and a sequence between these two can be found of every height and diameter. It is therefore rather difficult to differentiate between a stone circle and a cairn circle. In the last two instances given above the circle of stones surrounded something, in the first case two smaller circles, and in the other a burial of a woman and a child. Circles are not always necessarily made of upright stones only ; in some the stones stand planted on an earthen circle, or the stones may be entirely absent as in the Giant's Ring at Drumho, co. Down, which has a surrounding earth bank some 15 feet high enclosing ten acres with a dolmen at the centre, or the earth circle at Naas, co. Kildare, which is 216 feet in diameter, having one upright stone at the centre with an Early Bronze Age cist-burial at the foot. In almost every case, however, where a stone-circle has been properly excavated, its use has been found to be sepulchral and nothing else. The ' Aubrey ' circle can be classed with these circles and, judging by the objects found in the upper part of the ditch, its period would be Early Bronze Age at the latest, and more probably Neolithic.

As to the stone part of Stonehenge, which belongs to a later period, comparisons must be made with another class of sepulchral monuments. The following instances are given in what might be called their constructional order, but their chronological sequence is not yet definitely known. They are not drawn to any one scale. West Kennet Long Barrow (fig. 1) had a peristalith, a passage entrance and a roughly rectangular chamber. (*Archaeologia*, XLII, plate 14). Weyland's Smithy (fig. 2) was similar, but had two transepts at either side of the inner end of the passage, and two stones, one on each side of the passage towards the entrance but at right angles. (*Antiquaries Journal*, I, 193, fig. 3). Hetty Pegler's Tump, the Uley long barrow (fig. 3), had four transepts and two stones at right angles to the passage. (*Archaeologia* XLII, plate 14). Camster Cairn, Caithness (fig. 4) is usually described as tricamerated or tripartite, but in comparing it with the other examples it will be seen that the end chamber has become more enclosed and the four side chambers more open, and it may still be said to have five chambers. The passage entrance is longer in proportion to the whole and has four pairs of stones at right angles to it. (*Procs. Soc. Ant. Scot.*, VI, plate 27). Ormiegill Wick (fig. 5) is like the last. It is in a short horned cairn, but the chamber is surrounded by a circular wall of

stones inside the cairn, which may be said to take the place of an inner peristalith. (*Procs. Soc. Ant. Scot.*, VII, plate 62). Stoney Littleton (fig. 6) has six transepts and two pairs of stones at right angles to the passage. (*Archaeologia*, XLII, plate 14).

How can these be compared with Stonehenge (fig. 7)? Both long and round barrows have instances of either peristaliths or dry walls surrounding their bases; this corresponds to the sarsen circle. The passage entrance has become stones 30 and 1, 95, 96 and their fellows. In fig. 5, the dotted circle shown (which is deep in the cairn, and probably occurred in many other instances, only it is not usually looked for after the burial chamber has been rifled), corresponds to the blue stone circle. The transepts, now reduced to three stones each, are the five trilithons. The best example of a trilithon entrance to a transept is in La Hougue Bie, Jersey (plate II), which has two transepts and an end chamber. In none of the above instances are there examples of dolmen idols or pillars standing free in the central chamber. Bryn Celli Ddu in Anglesey has one and La Hougue Bie had three though in this case they were only 18 inches high. It may be that they are symbolic effigies of the dead, and it is possible that the horseshoe of blue stones represented these. This comparison with chambered cairns may be thought rather exaggerated, since the one thing common to all these cairns is a roof; but at Stonehenge the roof is there now, symbolically represented by the lintels of the five trilithons and, to a lesser extent, by the lintels of the sarsen circle.

The cairns and long barrows seem not to have been made for single interments but for repeated burials, the partly charred remains of domestic animals which have been found in them being offerings to the dead. If therefore it be granted that Stonehenge represents a development of the chambered cairn, it may be supposed that by the time it was built ancestor-worship had taken a more prominent part in religion than mere offerings and worship at the actual grave, and that this development demanded a building which, whilst retaining its sepulchral character, should be greatly increased in size.

It may be objected that the jump from a chambered cairn a few feet high to Stonehenge, which is over 20 feet in height, is too great, but intermediate forms may possibly be provided by wooden structures, the archaeology of which is as yet only in its infancy. A wooden structure has been found in a long barrow in Wor Barrow, and Bleasdale seems to be a wooden circle (*Trans. Lancs. & Cheshire Antiq. Soc.*, XVIII).

Woodhenge, which has not yet been published, is undoubtedly similar to Stonehenge and may have had eight *trizulons*, if such a word can be allowed.

Nothing has been said as yet about orientation. That Stonehenge was orientated towards the sunrise at the summer solstice is a fact. That any data can be deduced from that fact is doubtful, and for any further evidence to be got from it, one must wait until the orientation of chambered cairns, either long or round, is firmly established and explained. The intentional orientation of Stonehenge is confirmed by the fact that the axis does not coincide with the middle of the causeway. Had orientation been of no importance, one would suppose that the stone circle would have been so built that its axis would correspond to the middle of the existing causeway of the older 'Aubrey' circle.

As to when Stonehenge was built, it must be frankly admitted that any definite date is at present beyond our knowledge. Even a period in the Bronze Age is suggested with diffidence and must be received with caution. The 'Aubrey' circle cannot be later than the earliest period of the Bronze Age, and may belong to the end of the Neolithic Age. That Stonehenge was built after the 'Aubrey' circle is certain, and it appears to be closely associated with several barrows of the Middle Bronze Age. If it is true that chips of the blue stone were found in two of these barrows, then Stonehenge must be earlier than them. We are thus left with the end of the Early Bronze Age or the beginning of the Middle Bronze Age, to which a comparative date of about 1500 B.C. may be given.

Of the many post-holes (black) shown on the plan and not yet mentioned, nothing definite can be said. In two cases a shallow grave had been cut between two post-holes ; no objects were found in them and the remains have been classed as Early Iron Age or later. The holes (dotted blue) at the inner ends of the inclines to the outer blue stones on the north-east, may be connected with the 'Aubrey' circle.

Notes and News

ANCIENT RESERVOIRS NEAR KASR AZRAK

The following notes has been communicated by Group Captain L. W. B. Rees, V.C., together with the plans, made by himself, reproduced herewith. Both the reservoirs lie in the northern part of the Wadi Sirhan; the one called Ain el Asad is immediately south of the Roman fort at Azrak.

'This is a description and compass sketch of the Byzantine reservoir at Ain el Asad (fig. 1). The Roman fort of Azrak is a few miles to the north, on the southern end of the main road to Imtan and to Salkhad. The road is still used by camel convoys of salt coming up from the salt villages near Kaf in the Wadi Sirhan. These convoys, however, now water at Hazim and travel along the eastern edge of the Azrak marshes, whereas in the old days the road from Kaf followed the Wadi to the west of Jebel Tsokra (Rashrashiyeh) to Amari wells. There is a large reservoir at the end of Jebel Tsokra, and a town near the Amari wells, now nearly covered with sand. From here the track led up to Ain el Asad and then joined the made road through the basalt area. This made road is about thirty yards broad and at present contains some fifteen separate camel tracks crossing and recrossing between the road walls. The road has guard houses at intervals and there are a number of milestones lying about. I have rescued one from the Azrak Castle bearing the inscription MIL PAS LXXXVII OZ. The ruins of Awwaz on the road are exactly this distance from Azrak. They are near Salkhad.

'About fifty yards west of the middle of the western side of Ain el Asad is a mound. A Byzantine door threshold can be seen in the sand, but the remainder of the works are covered. The area is practically square. There are walls of sand all round and a mound of sand roughly in the centre. On the Majeba graves a mile away are lying Byzantine capitals, pillars and pedestals, worked in basalt. They probably came from the mound.

'An interesting feature is the ground near the NW corner of the reservoir, which shows small circular and square foundations. Two

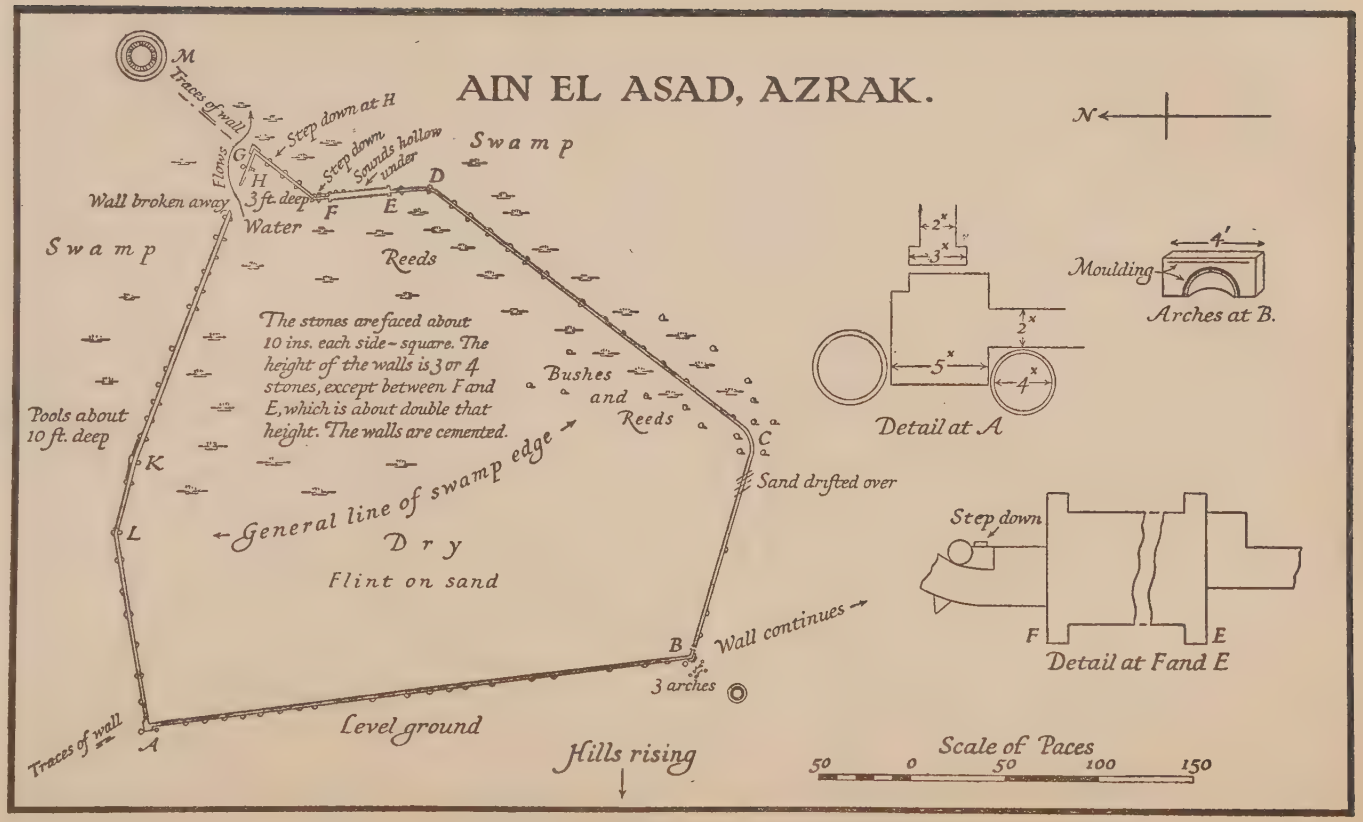


FIG. 1. BYZANTINE RESERVOIR AT AIN EL ASAD

of the circles are shown at the corner A of the reservoir. I dug down six feet into one circle and found that there were three rows of stones on a circular foundation. The foundation projected inwards six inches, and I went down two stones further. There was no sign of a bottom. This part of the circle was filled with loose stones and not much sand. At first sight the circles might be taken for wells, but they are so near the reservoir that this is unlikely. The construction is the same as that of the reservoir.

'The other interesting feature is the long wall round the south end of the marshes. The wall joined on to the reservoir at point B and runs roughly in a semicircle till it becomes lost in the sand at the end of the diameter some five miles east of the reservoir. The wall still holds enough water to form large duck ponds. Thousands of duck, sand-grouse and other birds water here. The pools near the reservoir hold carp and mud-fish. The mud-fish run to about five feet in length and some of the carp weigh 4 lbs. and over. They can be caught on a fly. His Highness the Amir says that the water from Ain el Asad is as good as any in Trans-Jordan.

'I could think of no reason for the part of the wall to the east of the reservoir, marked F–E. It is not built symmetrically and is of no obvious use. The whole work in this part of the marsh is covered, or nearly covered with silt. Originally the reservoir walls held up some six feet of water. It has therefore taken, shall we say, six thousand years to silt up six feet. If Ain el Asad were built now the water pressure would probably make the spring come up somewhere else in the marsh in preference to filling the reservoir. It must therefore be taken that the water level in this area has fallen considerably in the last two (?) thousand years, possibly six feet. These points are important when we come to consider " kites ". It verifies the impression gained from the air, merely by looking, that the " kites " are very old.

'The other reservoir (fig. 2) is interesting because it is so unexpected. It happens in the middle of the desert between Amari wells and Kaf in the Wadi Sirhan. It is quite close to the car track between Amman and Kaf. The area is surprising, but in this part of the country the head of water can never have been great. The land is nearly level for many miles around. The construction is Byzantine but I had no time to find where the culvert led. It appeared to lose itself in a large heap of sand. The site is well chosen. Even at the present time water lies here nearly all the year round, although the reservoir walls are broken '.

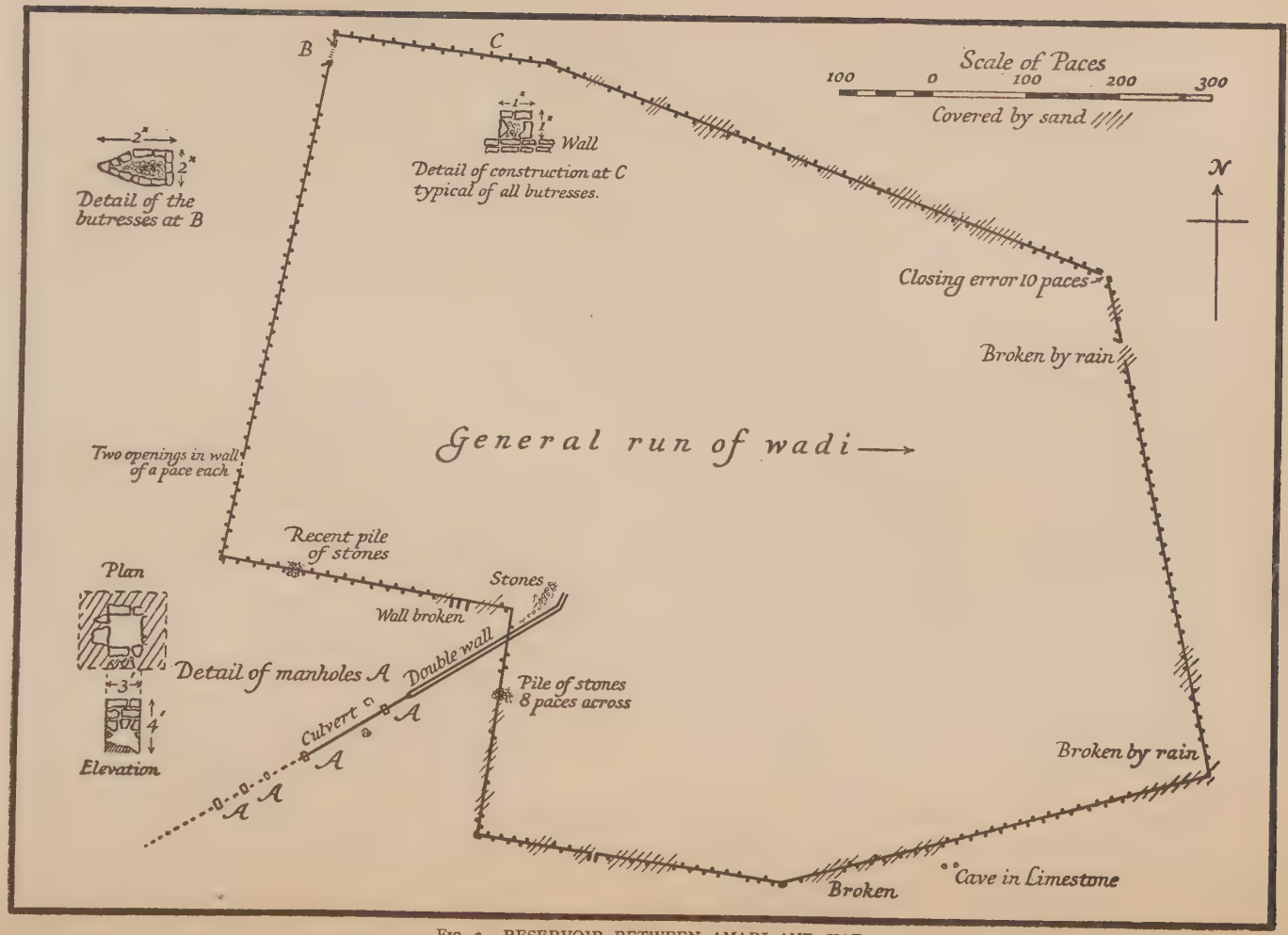


FIG. 2. RESERVOIR BETWEEN AMARI AND KAF

THE ROMAN WALL

Hadrian's Wall from the Tyne to the Solway ranks with Avebury and Stonehenge as one of our most famous ancient monuments. It is good to learn that it has now been scheduled as such, and it is to be hoped that this measure will protect it from mutilation or destruction. Though most of its course is known with some precision, there are portions which are still lost. One of these is in the town of Newcastle itself, where it has naturally been used as a quarry for ages past. Thanks to the efforts of the Roman Newcastle Investigation Committee, about 200 yards have already been discovered by means of digging trenches in the heart of the town. Now that this much has been done the course will be less difficult to follow up, since, even where the masonry is gone, the silted-up ditch remains and can be detected by the different character of the filling from the surrounding soil. It is only a matter of time and money before the Roman fort of Pons Aelii is located, the old castle in the heart of Newcastle. Excavation of this kind is much more valuable than mere pot-hunting, for it leads directly to the acquisition of new knowledge. There is nothing sensational about such work, but the thrill of each discovery is ample reward for those who have experienced it. The Committee deserves the practical support of all those Tyne-siders and others who appreciate good solid work for the advancement of Science. (The Hon. Secretary of the Committee is Lieut.-Colonel G. R. B. Spain, C.M.G., F.S.A., 8 Mosley Street, Newcastle-on-Tyne).

ST. COLUMBA AND IONA

We have received the following note from Professor R. A. S. Macalister :—

'The Editor of ANTIQUITY has recently deprecated controversy and I detest it. Sometimes, however, when a sciolist talks nonsense, there is an unfortunate necessity to show the error of his ways to other people, (not to the culprit himself: Proverbs XXVI, 12). But happily there is no such unpleasantness in the questions at issue between Dr Simpson and myself, though in some of them we must agree to differ, profoundly. I may later find occasion to express my own views more at length than I could have done in a short review, and more clearly than I seem to have done in noticing Dr Simpson's book. Meanwhile I only ask permission to make a personal explanation as to the alleged " Round Tower " on Iona : for I should be sorry if Dr Simpson continued to think that I had been misled by the modern well-head. It was my

privilege to enjoy the friendship of the late Dr Macgregor Chalmers. I was in his company on the island several times, and took part in some of his explorations of the cathedral substructures. I remember his excitement when the foundation appeared, which at first he supposed be that of a round tower, but I also remember that he completely abandoned this interpretation, on the ground that the dimensions were too small. In questioning the authenticity of the " round tower " I was sheltering under his judgment. I am confirmed in this recollection of Dr Chalmers' change of view by one of the trustees of the antiquities of the island, who was also in close touch with Dr Chalmers at every stage of his work '.

THE PAST IN THE PRESENT

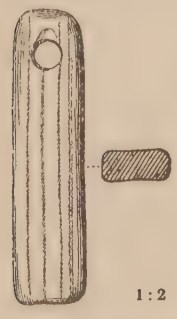


FIG. 1. MODERN HONE FROM EL KANTARA, ALGERIA

No archaeologist can shut his eyes to primitive survivals of the Stone Age, whether they be weapons and tools or habits of life. It is not necessary to go as far as Polynesia to discover stone implements in daily use. The little oblong stone implement here illustrated (fig. 1) was obtained by the Editor (through the kind offices of Mr Hilton Simpson) at El Kantara in Algeria. It is said to have been obtained in Mecca by a pilgrim; certainly there is no stone of sufficient hardness in the El Kantara district. It is a fine-grained sedimentary rock, of a greenish colour with dark bands, and is used for sharpening razors. The hole is for a leathern thong (still attached). To us its interest lies in its perfect resemblance to the hone-stones so often dug up in British barrows, particularly those of the Early Bronze Age. Their purpose is proved by this Algerian example, and it is plain that they were not, as has also been suggested, amulets. Doubtless they were used to sharpen the edge of those bronze blades which are so often found buried with them.

The hafted axe (fig. 2) from Neuchâtel is a fine specimen in itself. The wooden handle and even the fibre cord at the top are well preserved. It shows exactly how these axes were hafted, with the aid of a horn holder which was less liable than the wood to be split by the force of a blow. (Readers of our last number will remember M. Vouga's remarks on this subject). But we have chosen it for illustration because we happen to have seen a modern stone axe, also complete and hafted in a similar way. The Esquimaux axe (fig. 3) which belongs to Dr T. G. Longstaff, who kindly lent it for illustration, is inserted in a bone

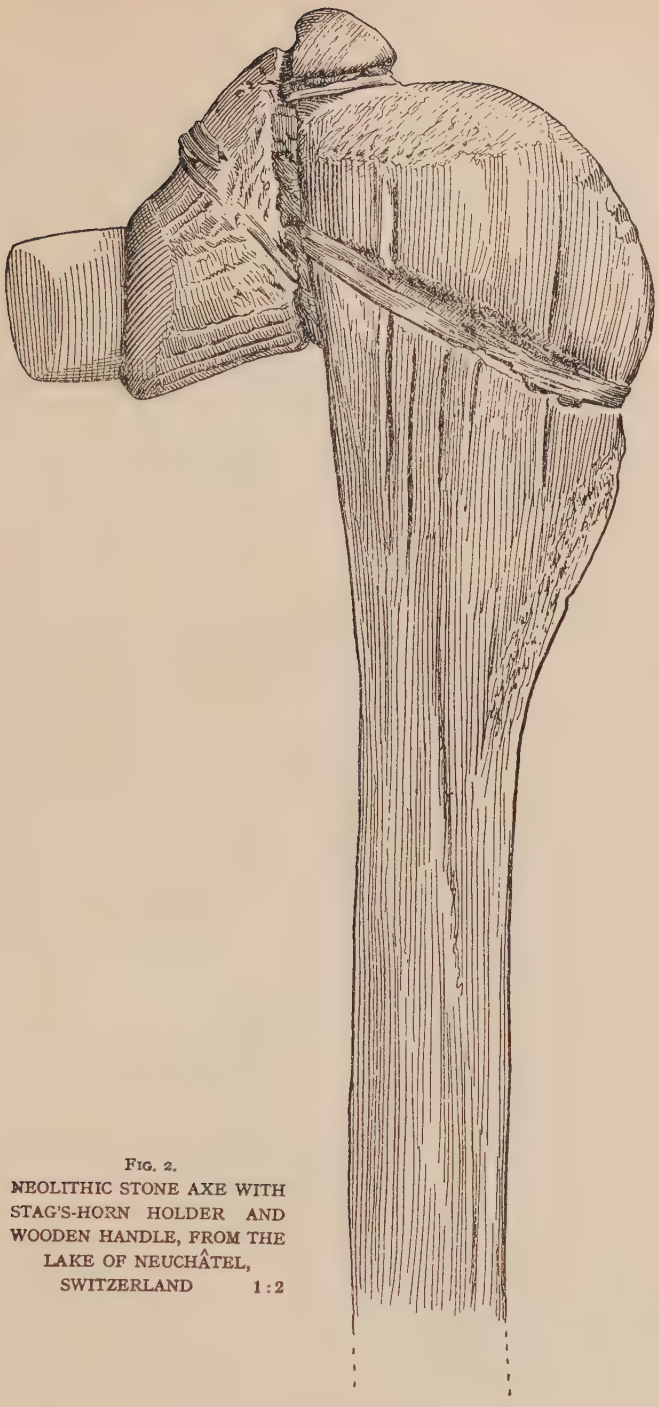


FIG. 2.
NEOLITHIC STONE AXE WITH STAG'S-HORN HOLDER AND WOODEN HANDLE, FROM THE LAKE OF NEUCHÂTEL, SWITZERLAND 1:2

holder and the precise method is not quite the same as that employed by the prehistoric Swiss lake-dweller; but there is a sufficiently striking resemblance. Had the bone handle been ancient and dug up

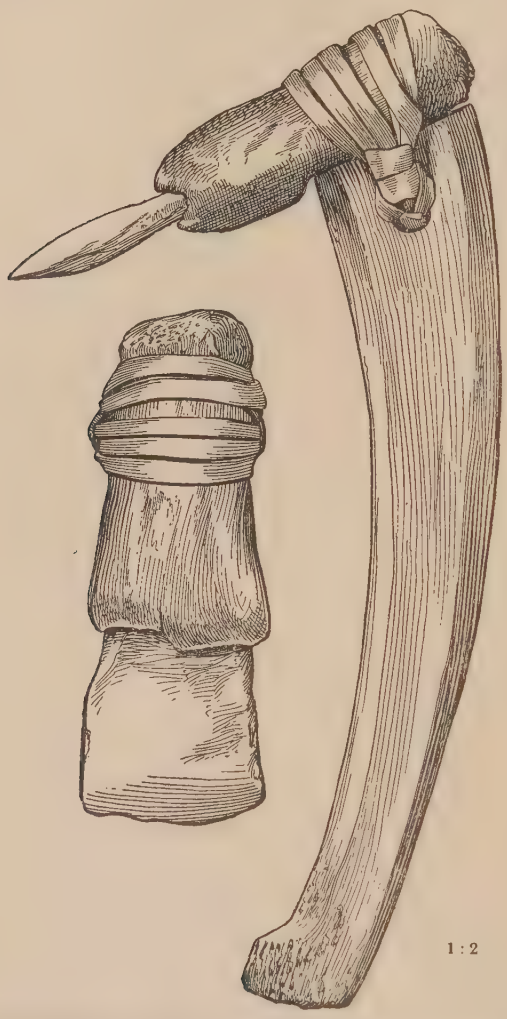


FIG. 3. MODERN ESQUIMAUX STONE ADZE WITH BONE HOLDER AND HANDLE, POINT BARROW, ALASKA

by an excavator, it might have been difficult to explain its purpose. Too little use is made of the Esquimaux by students of prehistory. Whether or not they are the descendants of the hunters of the Old Stone Age—

and a strong case has been made out for this theory—they certainly use things which closely resemble prehistoric European implements. The remarkable pronged horn objects which were found on our Neolithic sites at Windmill Hill and near Abingdon were explained by the discovery that modern Esquimaux employ similar objects for removing the hair from skins (see *Antiquaries Journal*, VIII, 470). Their flint scrapers too are identical with our prehistoric ones (Evans, *Ancient Stone Implements*, p. 268, fig. 203). Their methods of flint-flaking, particularly for making arrowheads, deserve close study (see *ibid.* pp. 33–36).

Analogies such as these illustrated here are valuable because the environment, in the modern instances, is not wholly dissimilar to the environment of our prehistoric ancestors. It is in such surroundings that the student, whose main interest lies in the past, will reap the biggest harvest.

WHEEL-TRACKS AND THE RAILWAY-GAUGE

Captain Alexander Hardcastle writes, from Agrigento, Sicily :—

'There were recently many letters in *The Times* about the origin of our strange railway gauge of 4 feet 8½ inches, now world-wide. One writer thought it dated from last century only, while another attributed it to the Romans. But evidently it is much older still. At Syracuse I selected some clear wheel-tracks of the 4th century B.C. and found them to be exactly 4 feet 8½ inches between the inner edges of the iron tyres. Here at Agrigento (Girgenti) I have photographed a measuring rod in position; the print [enclosed in Captain Hardcastle's letter] shows the ends quite exactly over the inner edges of the Greek tyres of the 5th century B.C. An old disused stone quarry at Viterbo (Italy) also shows clear wheel tracks precisely 4 feet 8½ inches, inside measurement of iron tyres. The prehistoric Maltese cart tracks have the same dimensions.

'Perhaps somebody will now trace it back to Crete and Assyria and find some religious origin for this remarkable tradition'.

Recent Events

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

Another prehistoric cave has been found at Altamira in Spain, 150 yards from the celebrated one containing the wall-paintings. A well preserved skeleton and scattered human bones have been found. The cave has been closed for study. (*L'Anthropologie*, XXXVIII, 444).

In a stone grave of the Bronze Age at Courtavant, Commune de Barbuise (Aube, France) there have been found a piece of leaf-gold with repoussé ornament, a bronze pin 18 inches long, fragments of bracers with spiral ornament, rings and bracelets, and four pots in a bad condition. The skeleton was that of a woman. The association of these objects is an important archaeological fact, and one hopes that the pots will be mended and a careful plan made of the grave. (*Bulletin de la Soc. préhist. Franc.*, November 1928; *Le Temps*, 10 December 1928).

A female figurine, unfortunately imperfect, carved out of stag's horn, has been found at Lumbres (Pas-de-Calais, France) by Dr Pontier. The site which he is excavating there contains two levels which he regards as being respectively Azilian and Neolithic. The figurine was in the lower (Azilian) level, but in the absence of any analogous contemporary finds an overlap into the preceding Magdalenian period is suggested. The southern hunters may have ranged far north (cf. the Magdalenian harpoon). It is claimed that the Azilian layer at Lumbres contains pottery. The full publication of the excavations will be awaited with interest. (*Bull. de la Soc. préhist. Franc.*, November 1928, pp. 446–7, 450–2).

Miss Caton-Thompson and Miss Kenyon have been commissioned by the British Association to explore the ruins of Rhodesia, of which Zimbabwe is the most famous. The fabulous age claimed for them was completely disposed of by Dr Randall-MacIver on the occasion of the Association's last meeting in South Africa in 1905 (*see* Report, pp. 301–4), but romantic fables take a deal of killing, and it is high time that the coup-de-grâce was administered to this one.

The excavation of the Roman fort of Kanovium (Caerhun, near Conway, North Wales) was completed during the third season's work in 1928. This summer it is proposed to examine a portion of the land outside, where there are indications of a civil settlement. A full report appeared in *Archaeologia Cambrensis*, December 1928.

An important stone relief has been found at Beisan (Beth-Shan) by Dr Alan Rowe of Pennsylvania University. It is a basalt panel 3 feet high and depicts a lion fighting with a dog. It was found in the temple of Mekal in the level of Thothmes III (1501–1447 B.C.). An account of the excavations was published in ANTIQUITY II, 192–5. (*Ill. London News*, 22 December 1928, p. 1181. An article by Dr Rowe appeared in the same paper 8 December, p. 1093).

Those in search of somewhere to spend a holiday might well visit Grand Pressigny in Touraine, Dept. of Indre-et-Loire. It is a picturesque spot, well-known to archaeologists as the centre of a prehistoric industry. The flint has a characteristic honey-colour and objects made of it were exported to distant regions. A fine collection of them is displayed in a room at the Town Hall. The principal other workshop-sites are in the communes of Abilly and Neuilly-le-Brignon. The district abounds in rock-shelters and there is a ' cave-village ' at St Remy-sur-Creuse. There are said to be aligned stones and ' pseudo-cromlechs ' in the field of Brenne, Commune of Neuilly-le-Brignon. (*Bull. de la Soc. préhist. Franc.*, October 1928, pp. 387–8 ; *Le Grand Tourisme*, Paris, no. 109).

A Jutish cemetery has been discovered at Finglesham, near Deal (Kent 48 SW), and is being excavated by Mr W. Whiting, F.S.A., of Faversham and Mr W. P. D. Stebbing of Deal. About 20 graves have been found, containing the usual assortment of glass and pottery vessels, arms and jewels. (*Daily Telegraph*, 11 December 1928).

An engraved masked human figure upon a rib-bone has been found in Pin Hole cave, Cresswell, Derbyshire. It belongs to the Upper Palaeolithic. The stratification of the cave is good. The finder, Mr A. Leslie Armstrong, F.S.A., will publish an account in the Journal of the Royal Anthropological Institute. (*Nature*, 8 December 1928).

Mr Callander's long awaited paper on Scottish neolithic pottery was read at Edinburgh 10 December 1928, and will be published shortly in the Proceedings of the Society of Antiquaries of Scotland. (*Scotsman*, 11 December 1928).

The second year's work at Caer Flos, also called the Gaer, a Roman fort near Forden, Montgomery, has produced valuable results in the form of new knowledge about the Roman occupation of Wales. The excavations, which are being directed by Mr F. N. Pryce of the British Museum, will be continued this summer. (*Daily Telegraph*, 29 December 1928).

Bushman paintings have been discovered in a cave in Basutoland by a German expedition led by Dr Frobenius of Frankfort University. The paintings, which are very well preserved, belong to different periods, and represent hunting-scenes. There is also a battle-scene in which the fighters are shown in dark brown and white paint respectively. Drawings have also been made by Dr Frobenius of paintings in the Orange Free State and Rhodesia. (*The Times*, 2 January 1929).

The discoveries at Kish may become of first-rate importance when they are fully published. So much however depends upon the stratification that we must wait until plans and sections appear before referring to them at greater length. Dr Langdon's letter in *The Times* (4 January 1929, p. 8) shows that the materials for a most valuable book are available.

A mosaic pavement with Hebrew writing on it has been found at Khirbet Beit Ilfa, near Shutta Station, Palestine. It is regarded as belonging to a 2nd century synagogue. Further investigations are to be carried out by Dr E. Sukenik, on behalf of the Hebrew University (*The Times*, 5 January 1929).

An effort is being made to acquire the site and ruins of Lessness Abbey, near Woolwich, for conversion into a ' show-place '. Being so near London it is admirably suited for the purpose, and we heartily commend the project. Of the total sum required (£20,000) no less than £1000 has been contributed by the Woolwich Borough Council—a most public-spirited act, for which future generations at any rate will be grateful.

By the time this number of ANTIQUITY is published most of this season's reports on the work at Ur will have appeared in *The Times*. The first report (11 January 1929, p. 11) indicated that the Royal Tombs had not then been reached, but the second (22 January, p. 11) shows that their existence is proven and that the finds are already of great interest. A ' death pit ', some 25 feet square, yielded gold ornaments and head dresses equalling those in the King's grave last season, and there are great hopes that below the pit will be found the royal tomb to which it should be the introduction. Amongst the finds already made are a cylinder seal inscribed ' Mes-Kalam-dug the King ', a harp, and ' a painted clay pot whose connexions with Kish and the circumstances of its finding here are most important for comparative chronology '. Some of these objects are illustrated in the *Illus. London News*, 26 January 1929.

Mr Leakey claims to have found Aurignacian remains associated with pottery in ' Gambles Cave ', El Menteita (Kenya), if he is correctly reported in *The Times*. Publication of the evidence upon which this claim rests will be awaited with interest (*The Times*, 12 January 1929, p. 11). The views of Professor Hans Reck, of Berlin, were communicated to *The Times* of 16 January, p. 11.

A Roman inscription has been found at Bowes (Lavatræ) Yorkshire. (*Newcastle Daily Journal and North Star*, 11 January 1929).

The Roman fort of Garrianonum (Burgh Castle, Suffolk) is falling into disrepair and efforts are being made locally to preserve it (*Eastern Daily Press*, 12 January 1929).

An interesting account of the city of Jerash and the work done there by the British School of Archaeology in Jerusalem, particularly on the site of the church of St. Theodore (5th century A.D.) and of a second church to the east of it, is communicated to *The Times*, 2 January 1929, pp. 13–14. A full report, with plan, appears in the current number of the *Palestine Exploration Fund Quarterly Statement*.

The task of draining Lake Nemi has proceeded steadily since last October and it will not be long before the remains of the Roman galleys—such as they may be—are revealed. An account of former attempts to raise the galleys is contributed to *The Times*, 21 January 1929, pp. 13–14, by its Rome correspondent.

Some Recent Articles

This list is not exhaustive but may be found convenient as a record of papers on subjects which are within the scope of ANTIQUITY. *Books are occasionally included.*

GENERAL

The Indebtedness of Greek to Chaldaean astronomy, by Prof. J. K. Fotheringham. *The Observatory*, October 1928, LI, 301–15.

The Origin of Some Hallstatt types, by Prof. V. Gordon Childe. *Man*, November 1928, XXVII, no. 140.

Nova et Vetera—a plea for a new method in palaeolithic archaeology. Presidential address by Dorothy A. E. Garrod to the Prehistoric Soc. of East Anglia. *Proceedings* (1928), V, 260–67.

A very welcome contribution to a subject which, as the writer says, has been 'smitten with a certain deadness' in recent years. Miss Garrod's suggestions with regard to method are based upon thoroughly sound principles, which are unaffected by any criticisms that may be made of her genealogical tree on p. 262. All students of prehistory should read it.

Field Archaeology as a profession, by Sir Frederic Kenyon, Director of the British Museum. *Nineteenth Century and After*, November 1928, pp. 659–68.

The problem of the pre-Chellean industries, by C. E. Vulliamy. *Man*, January 1929, no. 2.

An admirable exposition with some quite fresh arguments, by a disbeliever in 'pliocene man'.

Un cas intéressant de pathologie préhistorique—une pointe de silex dans une vertébre néolithique, by Ch. Morel and M. Baudouin. *Progrès médical*, 23 June 1928.

Contains also an account of other similar discoveries, and may be found useful by those who assert the peaceful character of the so-called 'archaic civilization'. [See ANTIQUITY, I, 121–2].

La Cultura del Vaso campaniforme : su origen y extension en Europa, by Alberto del Castillo Yurrita. Barcelona, 1928. 216 pp., 206 plates, 2 maps.

A full treatment of beakers, and their makers : an account of the Spanish groups and of the extension of the beaker outside Spain, with suggested explanations. The best book on the subject.

Abyssinia

Contribution à l'étude des megaliths Abyssins ; comparaisons avec d'autres monuments ; remarques sur l'interpretation des megaliths, by H. Neuville. *L'Anthropologie* 1928, xxxviii, 255–88 (the first article of a series).

America

Some unusual spear-throwers of ancient America, by J. Alden Mason. *The Museum Journal* (Univ. of Pennsylvania Museum, quarterly) September 1928, pp. 290–324.

China

The Lower Molar hominid tooth from the Chou Kou Tien deposit, by Davidson Black. Memoirs of the Geological Survey of China (Palaeontologica Sinica, series d, vol. vii, fasc. 1, 1927, Peking). 13 pages, 2 plates, numerous text-figures. In English and Chinese.

Egypt

The Empty Sarcophagus of the Mother of Cheops, by G. A. Reisner. *Bulletin of the Museum of Fine Arts*, Boston, October 1928, xxvi, 76–88.

A fully illustrated account, and incidentally an admirable exposition of the methods of modern archaeology.

England—Scotland

The River Solent and its tributaries, by Henry Bury, m.a., f.g.s. *Proc. Bournemouth Nat. Sci. Soc.* xx, 88–96.

A neolithic site at Abingdon, Berks (2nd report), by E. Thurlow Leeds. *Antiquaries Journal* (October 1928), viii, 461–77.

A chambered cairn at Allt-nam-Ban, Strathbrora, Sutherland, by W. Douglas Simpson. *Antiquaries Journal* (October 1928), viii, 485–88.

France

Le Camp à Fossés de Mousrez, Commune de Berneuil (Charente–Inférieure), by Dr Marcel Baudouin. *Bull. de la Soc. préh. Franc.* (October 1928), XXV, 431–2.

The camp is neolithic or eneolithic in date, but, unlike the neighbouring camp of Peu Richard, has never been systematically explored. It has, however, yielded a great abundance of stone implements and some pottery, here catalogued in resumé.

Cinq années de fouilles au Fort-Harrouard (1921–1925), by the Abbé J. Philippe. Pp. viii, 175, 4 plans, 36 plates, 18 line-blocks in text. Librairie Lestringant, Rouen, 1928. 60 francs.

Note on the excavations here described in *Bull. de la Soc. préh. Franc.* (September 1928), XXV, 368–76, by M. G. Poisson.

Fouilles au Fort-Harrouard, Commune de Sorel (Eure-et-Loir) by the Abbé J. Philippe. *Bull. de la Soc. normande d'études préhistoriques* 1922–4, vol. XXV. Rouen, 1926.

Fully illustrated description of the excavation of a camp containing, it is alleged, stratified remains of the neolithic, bronze and iron ages. Previous accounts have appeared in vols. XV (1907), XVIII (1910), XX (1912), and XXI (1913) of the same bulletin. Review in *L'Anthropologie*, XXXVIII, 381–2.

Les nouvelles publications glozéliennes, by A. Vayson de Pradenne. *Bull. de la Soc. préh. Franç.* (1928), XXV, 322–31.

Reviews the recent effusions of the adherents of Glozel—a rapidly diminishing band. The off-print is separately paged—a practice now given up by most enlightened societies. It is one which adds immensely to the labour of the bibliographer, and it cannot be too strongly condemned. The note on the outside, moreover, states the year, but not the serial number of the volume.

L'Origine du faisan d'Europe, by Cl. Gaillard. Assoc. Franc. pour l'avancement des sciences, Lyon, 1926.

Proof that the pheasant is indigenous in France, since its bones have been found in late palaeolithic deposits.

Notice sur les chevaux sauvages, bisons, aurochs et élans dans les Vosges, by Emile Linckenheld. *L'Anthropologie* (1928), XXXVIII, 245–54.

An enquiry into the (surprisingly late) date down to which these animals survived in the Vosges, based upon documentary evidence. The implications of the results arrived at are obvious, and deserve to be carefully studied by all excavators.

Iraq

Sumerer und Semiter in Babylonien, by Bruno Meissner. *Archiv für Orientforschung* (Jan.–Feb. 1928), I, 1–10 and numerous illustrations.

Old Sumerian Art, by L. Legrain. *The Museum Journal* (Univ. of Pennsylvania Museum, quarterly), September 1928, pp. 221–47.

Account of the recent finds in the Royal Tombs of Ur, well illustrated.

The Excavations at Ur, by H. R. H[all]. *British Museum Quarterly* (1928), III, 65–9.

Description of some of the more important objects from the Royal Tombs found 1927–8, together with excellent illustrations.

Malta

The Maltese rock-tombs, by Prof. T. Zammit. *Antiquaries Journal* (1928), VIII, 478–84.

An important minor contribution to knowledge, for Dr Zammit has been able to establish that some of the rock-cut tombs were contemporary with the megalithic buildings such as Hal Tarxien. Pottery of the kind called neolithic has been found in them, resembling the pottery from the megalithic sites. Thus Malta falls into line with other Mediterranean islands, such as Sicily and Mallorca, where artificial caves were made for burials. See Dr Zammit's latest Report, for 1927–8 (Govt. Printing Office, Malta) and the references in ANTIQUITY, II, 214–15.

Syria

Topographie historique de la Syrie antique et médiévale, par Réné Dussaud. Geuthner, Paris, 1927. Pp. lii, 632 and 16 maps. 200 francs.

Fouilles de l'École archéologique française de Jerusalem, by Fathers Abel and Barrois. *Syria*, IX, 187–206 (to be continued).

La sixième campagne des fouilles de Byblos (mai–juillet, 1927), by Maurice Dunand. *Syria*, IX, 173–86.

Excavation of a palaeolithic cave in western Judaea, by Dorothy A. E. Garrod. *Palestine Exploration Fund Quarterly Statement*, October 1928, pp. 182–85.

The cave is that of Shukbah, 17½ miles NW of Jerusalem.

Mission archéologique en Haute Djezireh (automne 1927), by Father A. Poidebard. *Syria*, IX, 217–23.

Preliminary notes showing what valuable work is being done by Father Poidebard, who is, we believe, the only foreign archaeologist who is using an aeroplane. We shall look forward with the greatest interest to the book which he will doubtless publish in due course. We hope the air-photographs will be better reproduced than those illustrating this article, which suffer from unsuitable paper and over-reduction.

Reviews

THE CIVILISATION OF GREECE IN THE BRONZE AGE. By H. R. Hall. *London : Methuen* 1928. *pp.* xxxii, 302, *and* 2 *maps.* 30*s.*

The lectures here first published were delivered in Edinburgh in 1928 before an audience learned indeed, but not purely archaeological. The present text can however bear little relation to the six addresses then delivered, since the fruits of subsequent excavations and researches in the Near East down to the latest discoveries at Ur of the Chaldees and the second volume of the Palace of Minos have been embodied without trace of a join. So here is a thoroughly up to date work well adapted for the public to whom it is addressed. Illustrated with 369 excellent photographs or drawings and written throughout in a pleasing style, it gives a very vivid picture of Minoan life especially on the aesthetic side.

It is indeed adapted neither as an introduction for the novice nor a text book. The conditions of a course of six lectures have entailed a modification of the usually accepted nine-fold division that, despite the clear explanation in the first chapter, might confuse beginners. At the same time Dr Hall has confined his attention very largely to Crete, saying very little of the Cyclades and pre-Mycenaean Greece. And in this field it is naturally hard to say anything not already said by Evans. None the less even here there is fresh material for thought, especially in the comparisons with Mesopotamia. So the Danubian origin of the spiral is discarded for a Sumerian. Even copper it is suggested came to Crete, as to Egypt, direct from Asia ; and as intermediaries Dr Hall has resuscitated the Phoenicians. Other novel points are the significance of Forsdyke's still unpublished discovery of iron in a Middle Minoan II context and the importation of Mycenaean faience into Assyria.

On the fiercely debated question of the chronology of the tholos tombs and other architectural features at Mycenae, the author is more than cautious. He indeed endorses the German excavators' conclusions about Tiryns (the evidence for which is still unpublished), but he merely summarizes without comment Wace's inferences without attempting an analysis of the admittedly very technical arguments advanced in support of them. On the equally, if happily less bitterly, contested issue of the nationality (or rather language) of the Mycenaeans Hall is more positive. He rejects the views of Wace and Nilssen (very properly saying nothing of Penrose Harland) and sounds a needed note of caution against too precipitate an acceptance of Forrer's identifications of Andreus, Eteokles and Atreus in Hittite documents. His own views are that the Mycenaeans did not yet speak Greek though there were Greeks dwelling already in Thessaly since the ' neolithic ' Dimini period. The Hellenization of the Peloponnese at least would only begin in the late ' B ' phase of Late Minoan III. In conclusion we should draw attention to a suggestive note at the end on a Russian paper by Zakharov pointing out the Caucasian analogies to the armament of the Shardina. It suggests a new line of approach to the fascinating problem of the Caucasian parallels to Hallstatt types. V. Gordon Childe.

THE ARCHAEOLOGY OF IRELAND. By R. A. S. Macalister, litt.d. *London : Methuen* 1928. *pp.* xvi, 373, *with* 16 *plates and* 22 *illustrations.* 12*s* 6*d.*

Professor Macalister's book will be warmly welcomed by archaeologists. It is not only the first complete review of the archaeology of Ireland—prehistoric, early Christian, and medieval,—but the work of the greatest living authority on the subject.

It has long been surmised that a scientific study of the prehistory of Ireland would throw valuable light on early cultures, both on the Continent and in England. Dr Macalister's object, however, in the present book has been rather to describe fully the antiquities of Ireland than to explain them. He has few theories to put forward, probably because he knows better than most people how much has still to be learned about Ireland's past and how many and mad the theories have been. His scientific conservatism is all to the good in an introductory work such as this is ; it opens the way for more critical and constructive books on the subject, especially for one on Ireland's external relations in prehistoric times. He emphasizes the fact—too often forgotten—that prehistoric Ireland was not, like England, an island of the North Sea, but an island of the Atlantic ; how much of the island's early civilization is due to insular development, how much to important customs, has yet to be discovered. But in this book Dr Macalister has dissipated some popular ideas about the Celtic Irish and their culture, he has displayed the archaeological treasures of Ireland as they have never before been displayed, and he has shown that Ireland, if only because of her isolation, has still valuable contributions to make to European archaeology.

Nothing is omitted, from the Asturian flints noted quite recently by Dr Bremer to the erasures in the Book of Dimma discovered by Dr Best ; from the unique jar-burial, similar to those at El Argar, unearthed in 1737 in county Cork, to the methods of construction of Ogham alphabets ; from the only coloured stone carving of the Bronze Age yet found in Ireland to the occurrence of stepped battlements on late Irish Gothic buildings. In his endeavour to make his survey as complete as possible the author has searched the whole of the archaeological and historical literature of his country and published everything which, in the light of modern knowledge, seemed important, giving full references to his sources. If for nothing else, he has deserved the gratitude of all future students of Irish archaeology for the bibliographical information given in this book, since some of the most important contributions to the subject are buried in obscure or little-read publications.

Dr Macalister has no encouragement for those who believe that Ireland was inhabited in Palaeolithic times, but finds the trace of Asturian and Campignian civilizations in northern Ireland definite, though slight. These he dates as hardly earlier than 7000 B.C. He repeats the theory, stated already in his *Ireland in Pre-Celtic Times*, that the earliest inhabitants of Ireland were probably the same race as the historical Picts of Scotland ; as it is based mainly on the fact that both had a matriarchal system, which of course was not peculiar to them, the theory is not yet proved. In the chapter on the Neolithic and Bronze Ages too much space is devoted to formal descriptions of commonplaces like core, flake, scraper, flange, stop-ridge and palstave. The book is evidently meant for readers who have little, if any, archaeological learning ; but as few of these are likely to read it, the space might have been given, with advantage, to a fuller discussion of Stone Age chronology. The same may be said of the chapter on the ' Principles of Christian Art ', which consists partly of a long list of the subjects treated by early Christian artists in Ireland, although these subjects belonged to the common stock of northern Europe,

and partly of geometrical analyses of the key, diaper, interlacing and other patterns, such as can be found in most good books on design.

The author's interpretation of the sculptures on the Clonfinloch stone as a picture of a battlefield is interesting but somewhat arbitrary, inasmuch as it is based on comparison with photographs of Neolithic wall-paintings in Spain shown to the author by Abbé Breuil, but not yet published, as far as I am aware. To the ordinary observer there are only two figures on the stone which might possibly represent men, the rest being nondescript ; with a few resembling axes and footmarks, such as are found in Neolithic sculptures in Brittany and Scandinavia. Abbé Breuil's photographs should be well worth publishing. This stone is regarded by Dr Macalister as another proof of very early relations between Ireland and the Iberian Peninsula, such as are certainly indicated by the Irish Asturian flints, the bell-beakers and the halberds. He has himself discovered a new and important link by noting the fact—not, I believe, noted before—that there is in Portugal a type of Neolithic javelin-head corresponding to the large, flat, lozenge-shaped ones found in Ireland.

The author finds no relations between Ireland and Scandinavia before the Viking period, although there are reasons for believing that some Scandinavian customs had reached Ireland by Early Iron Age times. In this connexion he is opposed to the common theory that the Trundholm Moss chariot indicates that some, if not all, of the Irish sun-discs were associated with sun-worship. He thinks that they were personal ornaments, and holds that the marginal holes in the bronze disc from Ireland, now in the British Museum, were merely for sewing the disc to a garment. His view is probably correct for many of the Irish discs, though it is impossible to ignore the great similarity between the Trundholm Moss and British Museum discs and the evidence provided by the broken bronze disc, gilt with gold, found in Ireland. In any case, these ornamented gold discs can only have been worn by persons of wealth or dignity, so that, in view of other evidence, it may be inferred that they were worn by priests. Dr Macalister seems, indeed, to have an objection to solar symbols--possibly because continental archaeologists have found in them a ready solution to all sorts of problems ; later on he affirms that the wheel-cross was not derived from a sun-symbol, but from the halo.

The Bronze Age date which the author assigned to the stone forts of Aran in *Ireland in Pre-Celtic Times* is here changed, rightly, for a later date, and he will have none of the theory that some Irish lake-dwellings are earlier than the Iron Age. He records the discovery by Dr Bremer of a small labyrinth at Sess Kilgreen, which has established a Bronze Age date for the well-known Hollywood stone and opened the way for further research into the meaning of the labyrinth in northern regions.

In his chapter on ' The Beginning of Written Record in Ireland ' Dr Macalister tackles a problem of the greatest interest,—what was the earliest form of writing used in Ireland ? Were not the Cuchulain tales, which go back almost to the beginning of the Christian era, handed down in writing, and if so, in what form ? He decides that the Irish scribes of the 6th and 7th centuries had before them literary materials linking them with the La Tène period, but that these were not written in either Ogham or Runic script. The inscription on the Killeen Cormac stone, which is partly in Ogham and partly in Roman letters, gives him the clue to *the other alphabet* in the form of a letter which he believes to be a modified *gamma*.—Other people have thought this letter to be an R or an N, and if it is ⌐ ,it is an isolated occurrence.—From this letter Dr Macalister infers, by a process of reasoning which the present writer is unable to follow, that 'the beginning of literary tradition among the northern nations 'may be dated ' about the 3rd century B.C. ',

and that ' Roman capitals was the alphabet in common literary use in pre-Christian Ireland '. This, could it be proved, would of course be a discovery of far-reaching importance.

In his chapter on ' The Expression of Christian Art ', which is particularly good, the author harks back to an old controversy in claiming the Gospels of Lindisfarne for an Irish scribe. He holds that the colophon is mendacious, that if it were true some important Irish manuscripts would have to be re-dated, unreasonably, and that the lectionaries are not sufficient to make the work Northumbrian. There is much virtue in his axiom that no colophon should be accepted which was not written by the scribe himself. On the other hand we may feel sure that, if Eadfrith was the scribe, he was trained by Irishmen at Lindisfarne.

The concluding chapters on Scandinavian and Medieval Ireland have many just and illuminating passages. Irish architecture from the 13th to the 16th century has (apart from ecclesiastical architecture) been little studied—partly because so much of it has been destroyed,—and Dr Macalister's analyses of influences and his classifications of very unruly material are most useful.

The faults of the book are the unnecessary digressions and illustrative anecdotes. There are allusions to corpse-factories and other horrors of the late war, to ' the repulsive practice of shingling ', to ' children who have the misfortune to be the offspring of hygienic faddists ', an excursus on the evils of slang and of such ' abominable words ' as ' bus ' and ' cab ' in the English language, philippics against modern civilization, and long anecdotes from the history of Cologne cathedral and the ' King's Mirror '. Such interpolations, which are frequent, only confuse and irritate the serious student, and are likely to give the casual reader quite a wrong impression of a work which, archaeologically, is of great importance. The numerous tirades on the vandalism of farmers and the ignorance of amateur archaeologists and the long extracts from Irish tales, though usually irrelevant, are not quite so obviously so.

It is very much to be regretted that the work is so poorly illustrated. With 389 pages, it has only 16 plates, 22 illustrations and no maps at all. A book on such a subject and of such importance requires at least four times that number of illustrations and one map ; in this matter the publishers have not done justice either to Professor Macalister, Irish archaeology or themselves. E. LYNAM.

THE ROMAN WORLD. By VICTOR CHAPOT, Professor at the École des Beaux-Arts. Translated by E. A. PARKER. *London : Kegan Paul* 1928. *pp.* xvii, 444, *with 2 illustrations and 12 maps.* 16*s*.

A series so ambitious as Mr Ogden's *History of Civilization* may be expected to contain books of various degrees of merit. Of the volumes which we have seen so far, this translation of *Le Monde Romain* appears to us to be among the best. It is no mean undertaking to attempt a coherent description of the *Orbis Romanus*, a subject so extensive and diverse that no one since Mommsen has hitherto made an adequate attempt to deal with it ; especially in view of the great mass of new material which has accumulated since the publication of *The Roman Provinces*.

Professor Chapot's object is to present to the reader a comprehensive account of the Roman Empire in which, while the general outline is clearly marked, every detail shall have its full value. He regards the history of the Empire as divided into three phases : the first, in which Rome preyed upon the kingdoms of the East ; the second, in which

she governed them, and other provinces, reasonably; the last, in which her dominion gradually but inevitably declined. Roman power, he points out, was extended at first by defensive campaigns, and though Imperialism became self-conscious under Julius Caesar, then, and later, security was the first consideration; every extension of frontier led to the acquisition of a protective zone beyond the new territory, so that expansion was automatic.

The book falls into three parts: a preliminary sketch of the expansion of Rome and its vicissitudes, from 146 B.C.; a summary account of the machinery of Government, and a description of life in the Provinces.

This last and most important section is nearly three times as long as the other two put together, and contains in every case valuable information as to the natural conditions of the province, its organization, and the general effects of Roman rule. The chapter on Egypt, owing to the exceptional amount of evidence which we now possess, is longer and fuller than the others; the account of Gaul is perhaps the best. Here M. Chapot considers that Rome really succeeded in the task of unification, and emphasizes the lasting effects of Roman civilization. In the case of Britain, material is scarcer, but the author uses it well. He wisely refrains from committing himself too deeply as to the purpose of the *Vallum Hadriani*.

Under the head of Finance we hear a good deal about sources of revenue, but comparatively little about expenditure. The financial policy of the Empire was not based on sound principles, and the falling off of industry in Italy itself, the centre of the Empire, was bound to lead to a crisis. Of this, and of other causes of decline, we hear but little in detail; but it would seem that M. Chapot has passed lightly over such subjects because they have been, or will be, more fully dealt with in other volumes of the series.

A few inaccuracies may be excused in a book of this size; by a curious slip the date of Caesar's murder is given as 43 B.C.; the spelling *Catoech* is probably due to the analogy of *cleruch*, which occurs in proximity to it. Some French measures are unfamiliar to English readers; we have some idea of a litre, but very few of us know the value of a hectare in terms of acres. The index might with advantage have been fuller. These are but minor defects which do not detract from the great value of the work as a whole. In conclusion, the bibliography is good, and the printing and general appearance of the book are superior to those of the French edition. J. F. DOBSON.

FROM MAGIC TO SCIENCE. By Dr CHARLES SINGER. *London: Benn* 1928. *pp.* 274, 122 *plates* (14 *coloured*). 25*s*.

This is a most beautiful book, one of which any author and any publisher may well be proud. It appears *en grande tenue* as becomes a work no longer an *ingénue*, but one that has reached maturity and been found worthy of the best outfit.

The collection of essays here revised have all appeared before in various publications, and their inclusion in one volume is not only a convenience to those who wish to read them, but also gives us a book through which one theme runs continuously.

The first essay on 'Science under the Roman Empire' begins, as all accounts of Western civilization, whether devoted to history or thought should begin, with Rome. It is followed by the chapter headed 'The Dark Ages and the Dawn of Science', which deals with that all too little investigated subject, the debt of the Latin West to Arabic learning: with a clear account of the chief channels by which it reached western Europe.

A description of the work of the Friars in adding to knowledge, and an estimate of the importance of the recovery of Aristotle's writings, are concluded with a summary of the scientific work of Roger Bacon. This ends with the following sentence : ' summed up, his legacy to thought may be regarded as accuracy of method, criticism of authority and reliance on experiment, the pillars of modern science '.

From this point Dr Singer passes on to the scientific thought of the Renaissance, and gives a most useful summary of the contributions to scientific knowledge of the Humanists; each is prefaced by the dates of the author considered. This list only ends with Bacon, Copernicus and Vesalius.

The third essay deals with ' The Lorica of Gildas the Briton, a magical text of the sixth century ' and is the history of a wonderful oath. The main interest in Dr Singer's comment on this protective incantation is that he shows it to be perhaps the earliest link between the Celtic and Anglo-Saxon languages and cultures. The same point arises in the next essay on ' Early English Magic and Medicine ', where the sources of the medical lore of the dark ages are most carefully analyzed, while the thesis in the text is ingeniously corroborated by the excellent illustrations.

The chapter on ' Early Herbals ' from classical to modern times, has the most entrancing illustrations, perhaps, in the whole book, and that is saying a good deal.

' The Visions of Hildegard of Bingen ' is a study of the philosophical writings and theories of an abbess of the twelfth century. It is with her views of the material world that Dr Singer chiefly deals, and it is interesting to see how her ideas were modified as time went on by the fresh knowledge that came her way. The illustrations, facsimiles from the pictures in the Hildegard manuscripts, showing, for instance, the medieval conception of the soul entering the body of the unborn child, are intensely interesting.

The last essay, on the school of Salerno, largely the work of Mrs Singer, is a critical unravelling of the true from the false in the legends that have collected round the origins of this famous medical school. It is surprising to learn that the Dame Trot of our nursery days had an Italian origin, but disappointing to find that Trotula, the lady, was really only a man, one Doctor Trottus, whose works were commonly known as the Trotula.

Alike to the student of the Middle Ages, and to the general reader, this book is a mine of new and significant facts, and fills up some of the gaps that remain in our knowledge of the period between the civilization of the Roman Empire and that of the Middle Ages from the twelfth century onwards. If the page as well as the plate or figure number could be given when illustrations are referred to, it would be a great convenience to the reader, but that is a minor fault found in most illustrated books, and can be forgotten in the many delights provided by this fine volume. DIANA PORTWAY DOBSON.

POIGNARDS, RAPIÈRES et ÉPÉES DE L'AGE DU BRONZE. Par LÉON COUTIL. Extrait de *L'homme préhistorique*, *Années* 1926–28. *pp.* 99 *and* 33 *plates.*

No doubt many archaeologists will expect something new in this comprehensively-titled work from the pen of M. Coutil, who has long been known for his researches on the Bronze Age in Normandy. In its variety of illustrations it does, indeed, present an original aspect, but when it is said that they are generally inadequate and occasionally inaccurate, and that the text is both lacking in originality and extremely confusing, it will be realized with what disappointment one reader, at any rate, has put it down. It is impossible to see wherein lies the value of some of the agglomerations of types figured; and even when some uniformity of type is discernible, the method used in classification

seems to be based on typological detail with little reference to time or place. The author excuses himself as having had, as the work grew, to intercalate specimens in his original plates, and to add others, so that, apart from the incongruity, the plates are sometimes numbered wrongly in the text; but what excuse can be offered for referring (on p. 4) to one sword as type 5 (plate v, fig. 15) and on the same page, to the same sword (so far as can be made out), first as plate iv, fig. 15 and then as type 15? The illustrations are on varying scales, indicated by means of figures representing the actual lengths of the weapons printed alongside; but the figures are sometimes missing and frequently illegible. They are repeated, however, in the explanations of plates which occur here and there throughout the work.

On plate viii, 14, and also on plate ix, 3, is shown a peculiar type of sword from Pressigny–l'Orgueilleux (Eure) said to have been found in a tumulus (p. 49) and to be housed in the Musée de St. Germain (it is marked in the sword-figure as Coll. de Palligny). We take this to be the same sword as that illustrated by Coutil himself in the *Association française pour l'Avancement des Sciences* reports, Rouen, 1921, but it differs from it in important details and also fails to comply with the *cast* of a significantly similar sword from Pressigny (found in the Seine) in the French National Museum. Alongside this (plate iv, 13) is an interesting and very rare (because complete) example of a type of sword found in northern France and south-eastern Britain, with a fine carp's-tongue point: it bears the legend 'Dans la Tamise (British Museum)', but a thorough search has failed to reveal its presence in the cases of the Museum. The latter part of the work is mainly a reproduction of Naue's plates, and seems to bear little relation to what has gone before. It is impossible to summarize whatever scheme of classification the author may be following. There are short additional notes on, and illustrations of, Hallstatt swords and daggers, abnormal types, sheaths, and haft decorations; and, throughout, numerous misprints. ESTYN EVANS.

DIE STELLUNG DER SCHWEIZ INNERHALB DER BRONZE ZEITLICHEN KULTUR-GRUPPEN MITTELEUROPAS. Von GEORG KRAFT. *Anzeiger für Sweizerische Altertumskunde*. Neue folge XXIX (1927) 1-4; XXX (1928) 1, 2. pp. 82. Abb. 15. Taf. XII.

We owe these articles on Bronze Age Switzerland to the desire of Dr Kraft to pursue various questions raised in his well-known researches on the Bronze Age in South Germany. Though not so full or conclusive as one would wish, the series is of great interest and cannot fail to rank highly among comparative archaeological studies. The author took as his starting point, he tells us, the work of Keller and Viollier on the late Bronze Age graves (section B), thence looking before and after and studying the earlier stages (section A) and the pile-dwelling culture (C). An analytical summary will, it is felt, be more fitting than a critical review.

The general introduction deals briefly with the space-relationships of prehistoric Switzerland. Emphasis is laid upon the importance of communications over the relatively open Alpine passes of the Bronze Age. A mountain system frequently offers, by virtue of its roughly symmetrical structure, similar settlement-controlling conditions on both sides; and in detail as well as in general (the 'Lombard' flanged celt is cited) the north Italian Bronze Age is allied to central European cultures rather than to Mediterranean groups. Three provinces are sketched; the northern Mittelland, open to east, west and north; west Switzerland, adjoining the great south to north corridor of the Rhône–Saône; and the Alpine territory communicating with upper Italy. (The Swiss

Jura are ignored because of their archaeological poverty; and one cannot but remark on the contrast with the French Jura).

A. Culture movements in the early and pure Bronze Ages.

Finds made in the Valais show from the beginning both eastern and western influences, blending, and later giving way to native inspiration. Eastern forms are seen in the *Osenhalsreif* (ingot torque) with rounded section, and in the predominating *Kopfrolle* (roll-headed) pin, from which the clover-leaf and disc-headed types develop. In the Mittelland, the bronzes are of Bohemian form, while Vaud and Gruyère have mixed inventories. For western traits, Viollier has shown the first metal objects in the pile-dwellings to be of Spanish affinity. Several halberds from the Valais are figured. More frequent is the small triangular dagger of western type, which may have reached Switzerland by way of Hungary or Bohemia. Descriptive details of grave-finds follow, and a relative chronology is established by stages in the evolution of the flanged celt.

The older graves of the Mittelland contain objects paralleled in the south German tumuli, but the culture group is not ' exclusive ', objects as well as burial rites varying considerably. Type-objects of periods B, C, and D are illustrated (pls. VI and VII) from the burials of Rümlang, Eschheim, and Thayngen (among others) respectively. Celts with stop-ridge, of western pattern, occur sporadically in eastern France, the Rhine valley and western Switzerland during the middle Bronze Age, and Dr Kraft thinks it was this type which, combining with the winged axe of the tumulus culture, produced the Lappenabsatzbeil, *i.e.*, the common ' winged palstave ' of the pile-dwellings.

B. The late graves of northern Switzerland.

Two type-burials are examined : those of Mels (St. Gall) and Oberendingen. The first group have poppy-headed pins (Mohnkopfnadeln) as a characteristic feature, while all the bronzes tend to be ' baroque ' in style. Varieties of the true poppy-headed pin (which does not strictly correspond to what the French sometimes call the *épingle à tête de pavot*) are described and their distributions outlined. Their point of origin is North Italy, but other associated bronzes, bracelets and neck rings have parallels in upper Bavaria and Hungary. Knives are common, and their mention leads on to a useful summary of the evolution of the bronze knife in Central Europe. Pottery is so restricted as to yield no conclusive evidence of its affinities. Graves of the Oberendingen type are, like those of Mels, after cremation, usually in flat burials ; and the type-object is again a pin—named after the Binningen (Basle) site—with rounded head and a neck marked by horizontal ribs. Similar pins are common in the pile-dwellings and in the south-west German urnfields, where also the bracelets of twisted form and the small bronze rings have numerous counterparts. The Oberendingen burial yielded three small pots and a large urn with cylindrical neck having Hallstatt affinities in both form and colour. This urn-type was evolved from the Early Bronze Age Aunjetitz urn in the old Austria-Hungarian territory.

Sword-burials (male) of the type of Rixheim and Monza are next treated. Both the Rixheim sword (Déchelette's *Epée à languette*) and that of Monza are found in flat graves, either by inhumation or cremation ; and the former is also known from isolated finds. It probably evolved in upper Italy from the copper dagger. The Monza sword is tanged, but the blade itself is exactly similar to the Rixheim type—slender, with a semi-circular midrib marked off by parallel lines. Graves of the type of Basle, with Griffzungenschwerten (Naue II), receive brief notice ; the first appearance of a ' leaf-shaped ' (though actually straight-bladed) sword in the area is worthy of fuller treatment. Associated objects compare with those found with the Oberendingen burials.

The ' baroque ' pins of Mels are contrasted with those of Binningen ; and the contrast between these two cultures is further illustrated to show that it corresponds to a fundamental differentiation of style between Bronze D and Hallstatt A. Herein too, lies the distinction between the sword-burials of types Rixheim and Basle ; the first are contemporary with the Mohnkopfnadeln graves, the second with the Binningen burials. While the former pins are not found in their typical form in the south German urnfields, the latter type is widely represented there. The conclusion, based on typological as well as general considerations, is that while the Mels-Rixheim culture has north Italian affinities, the Oberendingen-Basle group is closely ralated to the north-east Alpine cultures. That there was actual movement of peoples is claimed on *a priori* grounds and supported by evidence such as the increase in the custom of hoarding bronzes and of building fortified dwelling places, and the decrease in the amber trade with the last phase of the Bronze Age, suggesting a period of unrest. Two consecutive immigrations are called for ; the first came from upper Italy, reaching the Rhine valley and receiving upper Bavarian elements, to be pushed further down the Rhine, out of Switzerland, with the penetration of the Oberendingen people from the northern part of the east Alpine territory, bringing a culture which gives the entire early Hallstatt civilization of south-west Central Europe its character. Finds of mixed inventory and facts of distribution are rather inconclusively discussed in this connexion. In ending this section the author has some interesting general observations to make. The zone north of the Alps (to use Reinecke's phrase) has two culture poles, east and west. Radiating influences from the east include elements of the Lausitz culture, illustrated in a vase from Zurzach (fig. 8). Then the Oberendingen urnfield group spreads west at the beginning of Hallstatt A, through southern Germany and northern Switzerland to eastern France. Mycenaean traits, coming by way of Hungary, are hinted at in the gold-leaf of Binningen and in the guards of the Mörigen sword.

Section C deals with the Bronze Age pile-dwellings, the culture of which represents the western pole referred to above. Chronologically it falls almost entirely into Reinecke's Hallstatt A and B, with some Bronze D ; *i.e.* in Déchelette's period 4. But bronzes from the Limmat (Zürich–Letten) include middle Bronze Age forms ; and the outlets of Lakes Geneva and Constance similarly yield types of all periods. In the famous lake-stations, middle Bronze Age types are almost entirely wanting ; but this interesting contrast is not pursued further ; we are merely told that ' profitable information on climatic questions may be expected '.

The Mohnkopfnadel is rare, but the commonest pile-dwelling pin, which, it is suggested, might be labelled the Pfahlbaunadel, has a large spherical or pointed head and a smooth slender stem, and its decoration occasionally recalls the horizontal ' banding ' of the poppy-headed pin. Derived forms of the Binningen pin, found in its original form at Mörigen, are not uncommon. Five other ' eastern ' varieties of pins, including the Vasenkopfnadel, are mentioned. Typical urnfield bronzes, though decreasing westward are found in west Switzerland, and the cylindrical-necked urn turned up in plenty at the Alpenquai (Zürich). But we must look to the west for the origin of such characteristic features as the spherical-headed pin and line ornamentation. West European culture traits are seen in Switzerland from the Early Bronze Age, and are further evidenced in the occurrence of palstaves. Special types of axes are also found in the western lakes, and while the entire lake culture is strongly unified, it is to be observed that the beautiful hollow bracelets do not occur in the east, perhaps for economic reasons.

In pottery and bronzes, Western forms are distinguished by smoothness of form and

by line ornamentation. The baroque style of both the northern and eastern culture-centres stands out in marked contrast. The smooth surfaces are decorated almost exclusively with straight lines, or concentric circles disciplined into rows ; naturalistic ornament is quite absent. The contrast between the straight line (W) and the spiral (E) ornament is traced back to the late Neolithic period and the persistence of the western ornament shown to be related to pottery shapes.

The problem of the western culture was the assimilation of the eastern ; but once achieved the amalgamation was very successful. There were later Italian contributions, too, as occasional horse-bits and combs, etc. show. An analysis of the indigenous style-phases follows. Bronze D is represented by some objects of the older urnfield group (Mels-Rixheim), which also fill the transition to Bronze E (=Hallstatt A). Then comes the Blüteperiode, with its large hollow-headed and its minute vase-headed pins ; and comparisons with the rich urnfields of the Rhine valley fix the date as Hallstatt B. Iron, already in use as inlay material, now begins to be used for pins and sword blades. Two clearly defined groups of pottery are distinguished : black ware with white incrustation or tin inlay, and red and black ware. A detailed analysis of the conjectured colouring processes is here interpolated. The red and black pottery is roundish and has furrowed ornament on open surfaces, and the contrast between this and the black ware, with its line ornament, is shown to be the contrast between Hallstatt B and Hallstatt A. A change of style is also seen in the bronzes—at first smooth and massive, later hollow and richly decorated—though these are naturally more conservative.

Recapitulating, Dr Kraft emphasizes the significance of the geographical location of Switzerland, open to influences from east and west—a region where cultures of varying traditions have fertilized each other, living together yet retaining a measure of individuality. When reoccupation of the lake shores took place with the appearance of the older urnfields (Melś-Rixheim), the villages were placed farther from the present shore than the Neolithic stations. The next stage (Hallstatt A) begins with the penetration of the newer urnfields (Oberendingen-Basle) from the east Alpine foreland ; and the high-grade lake civilization, composed mainly of western culture elements (perhaps derived from the Valais) with Italian as well as eastern additions, persisted until the onset of damper climate at the beginning of the middle Hallstatt period. An interesting map shows lines of movements in Europe at the end of the second miliennium B.C., and a chronological table presents a useful summary of the Bronze Age cultures in Switzerland and Central Europe, with absolute dates after Montelius, Kossinna, Schmidt, Bosch-Gimpera and Bremer on the one hand, and Reinecke and Childe on the other. Throughout the series is well illustrated, though this applies less to the first and last sections than to section B. The late Bronze Age graves have indeed been well treated, but many aspects of the transition periods are still, as the author admits, not clearly understood.

ESTYN EVANS.

ENGLISH RIVER-NAMES. By EILERT EKWALL. *Oxford : at the Clarendon Press* 1928. *pp.* xcii, 488. 25*s.*

The author tells us, in his preface, that all his place-name work has been but a preparation for this volume. A year or two ago those of us who had the pleasure of hearing him lecture on river-names at King's College, London, marvelled equally at the amazing erudition of the lecturer and at the courage that could attack a subject in which so much is, and must remain, obscure. The documentary material is comparatively scanty,

for the stream does not get into records as easily as the homestead on its banks; the printed records are sometimes incorrect and have to be controlled by a comparison with the manuscript sources, there are very few 'Vorarbeiten' that can be taken seriously; and, most discouraging of all, most of the river-names are so prehistoric that they can often be explained only by conjectural additions to the recorded vocabularies of Celtic, Old English and Old Norse.

Professor Ekwall has adopted a method which all students of place-names might follow with advantage. He has not been satisfied with collecting early forms and giving an explanation based purely on linguistic material, but has motored over the country in all directions and then attempted to reconcile phonetic considerations with topographical features. Thus he finds that his identification of the Hamps (Staffordshire) with Old Welsh *ham-hesp*, summer-dry, is confirmed by the character of this limestone stream, which is what is called in English a Summergil, the second element of which means dry, barren, or a Winterburn. In dealing with names for which no etymon can be found in the linguistic records of the country, he often adduces evidence from Latin and Greek, Gaulish and Germanic to reconstruct what must have perished before our records begin.

The author does not believe that the pre-British element is important. Here some students will hesitate to follow him. Is it not probable that many apparently British names may be corruptions or adaptations of an earlier nomenclature, just as some apparently Old English names are perversions of British originals? If the Anglo-Saxons adopted innumerable river-names from the Britons, why should not the latter have borrowed in the same way from their predecessors? At any rate the number of important names and name-elements for which no clue can be found in Celtic is pretty considerable. For the whole Thames group (Tame, Teme, etc.) we get nothing more immediate than a possible ultimate identity with Sanskrit *Tamasā*, a tributary of the Ganges, lit. dark water; Severn *may* have something to do with a root which appears in Sanskrit *sobar-*, which *may* mean 'milk'; and for Humber (it is astonishing to find that there are, or have been, eleven Humbers in England) a couple of Celtic origins, both purely conjectural, are put forward without any appearance of conviction.

Where the same name is found applied to several rivers a certain or plausible solution can usually be given, *e.g.* the Celtic elements *dubo-*, dark, and *dubro-*, water, enter into a large number of river-names, and it is generally accepted now that the fairly numerous Rays and Rees represent Old English *ēa* with prosthetic *r-*, resulting from (*æt*) *þǣre ēa*. This *ēa* has suffered a curious change in the Lincolnshire fens, where the 'French' name *eau*, applied to feeders of the great drains, is a 'learned' perversion of *ēa*, or of a Middle English *ō*, representing the cognate Scandinavian *ā*. Less certain, but on the whole convincing, is the identification of the many north country and Scottish Calders with Welsh *caled*, hard, and *dwfr*, stream. It appears that the Calders are swift streams. That the various Coln(e)s and Cluns belong together seems pretty clear, but neither the root, nor the suffix (also found in Aln and Calne) can be explained.

Back-formations, some of very early date, are numerous. There are three Cranes, evolved from Cranbrook, Cranbourne, and Cranford respectively. Essex has its Brain and Chelmer, illegitimately inferred from Braintree and Chelmsford, and Sussex its Arun, from Arundel. This was formerly the Tarrant, identical with Trent, representing a British *Trisantōn*. The obscure nature of the problems offered by this field of research is well exemplified in the conjectures enumerated on pp. 417–18 as possible explanations of the above name.

I have only nibbled at this monumental work, which all students of place-name lore should possess. That the amount of positive result is comparatively small lies in the nature of the subject. The author's aim has apparently been to gather into concise form all the available material, to show what is etymologically certain, and, with regard to the uncertain, to put forward all the possible theories that would occur to the comparative philologist, in the hope that later workers may be able to do something towards selecting and deciding. E. Weekley.

SOME STYLISTIC AFFINITIES OF BUSHMAN ART. By I. Shapera. *Reprinted from the* South African Journal of Science, *November* 1925. *pp.* 504–15.

In view of the coming visit of the British Association to South Africa I have been asked to write a few words about the above paper. Mr Shapera has made a very good *exposé* of his subject as far as the literature before 1925 permitted. The study of South African prehistory is rapidly advancing and since that date it has been found possible to distinguish a number of separate art groups in different geographical areas, and further all the pictures in a given area are by no means of the same age. If Mr Shapera continues his investigations, it will be necessary to take these art groups separately. He is quite right I believe, in rejecting any close connexion between the art found in rock-shelters in eastern Spain and the 'Bushman Art' of the Union of South Africa; I am not so sure he will be so certain in the case of the rock-shelter paintings of South Rhodesia? The paper as a whole forms a very good *point de départ* from which further investigation in the light of recent knowledge can be made. By the way, on p. 508 (p. 5 of the paper) it is implied that outline paintings occur in South Rhodesia but not in the Union of South Africa. Such paintings are rare in South Rhodesia, but do also occur further south—for example at a site near Tylden, etc. M. C. Burkitt.

MAMMOTHS AND MAN IN THE TRANSVAAL. By Prof. Raymond A. Dart. *Supplement to* Nature, 10 *December* 1927.

This article is of very great interest to all prehistorians interested in South Africa. The finding of two mammoth teeth with Lower Palaeolithic tools in the gravels of a lower terrace of the Vaal river opens new possibilities of investigation and correlation. Of course it cannot yet be affirmed that the beast whose teeth have survived was exactly the same as, or contemporary with, our European mammoths, but further discoveries may throw light on this matter. It is known that South Africa, though outside the range of alternate glacial and interglacial phases, underwent alternate periods of dampness and aridity. Can these be correlated (a) with the undoubted river-terraces of such rivers as the Vaal, (b) with the glacial and interglacial maxima of Europe? Work which is being done in Kenya will help forward the solution of this problem; in the meanwhile the finds published by Prof. Dart are of great importance in this connexion.
M. C. Burkitt.

ESTUDIOS ESMERALDEÑOS. By Max Uhle. *Anales de la Universidad Central*, vol. xxxix, *no.* 262. *Quito*, 1927. *pp.* 61 *and plates.*

Dr Uhle writes in detail of certain of the results of the archaeological expedition sent in 1926 to the Province of Esmeraldas by the Universidad Central at Quito, the general account of which was published in no. 259 of these *Anales*. The province had also been explored earlier by Professor Marshall Saville. It lies along the coast in the

north of Ecuador, and with a damp tropical climate it seems, Dr Uhle says, little fitted for the development of a native culture without continuous help from outside ; ' yet the soil of the Province is highly rich in the remains of ancient civilizations, which in some respects even strike us most highly among all the ancient cultures of Ecuador '. Saville (with whom Uhle agrees) has stressed the importance of the Esmeraldas area for the study of the southward migrations from Central America ; Uhle is also inclined to accept pre-Inca influences from Peru, but not Andine influences, anyhow from Ecuador. Lists are given of the objects found on the various sites examined, among which are great numbers, very many broken, of human and other figures (some of the faces, Dr Uhle says on p. 25, seem to be negro). The biggest site explored was La Tolita at the mouth of the Santiago river : here a section was dug through one of the mounds. The Esmeraldas culture, Dr Uhle concludes, is not a new intermediate type between those of Central America and the Peru region, but only a repetition of Chorotega types, influenced by Mayan, in a fresh area. There were also later Inca influences. Few human remains were discovered, owing, in part, to surface changes in the area (sinking coast line, the effects of winter floods in the rivers). G. C. Wheeler.

IN SEARCH OF OUR ANCESTORS. By Mary E. Boyle, with a preface by the Abbé Henri Breuil. *London : George Harrap* 1927. *pp.* 287. 10*s* 6*d*.

This book, admirably produced, and with an introduction by the Abbé Breuil, rouses lively anticipations of good things to come in the minds of archaeologists, but though they are not sent empty away, they are fed with so many stones, or rather bricks, that they will suffer from the results for a long time.

In the preface the Abbé expresses the hope that the book will impress on its readers the importance in archaeology of the evolutionary method of acquiring knowledge, and to achieve this the author has adopted the plan of working backwards instead of forwards. *A priori*, such a system has much to recommend it, but in this case it is not a success. The book starts with the time of La Tène III, and travels back to the primary geological era. This programme alone is ambitious for a work of 270 pages. Each period is dealt with separately, but its derivation from preceding ages is not made clear at all, and so the work fails in its chief aim. The illustrations are excellent in themselves, but do not always represent the objects of the greatest importance in the text. Thus the long descriptions of Etruscan artefacts is not illustrated at all, while there are three pictures from Greek vases.

The bibliography is admittedly incomplete, but it does not contain a single standard work on ancient history. This omission may account for some of the surprising statements in the earlier part of the book. Space does not permit of an enumeration of all the discrepancies and inaccuracies which mar this ambitious piece of work, but some of the most surprising must be cited as a guide to the unwary.

On page 35 we read that ' In the year 100 B.C. the kingdom of Etruria was bounded by the Arno, Appennines and Tiber, and by means of their fleet the Etruscans had complete control of commerce in the Tyrrhenian sea, made a treaty with Carthage, held Corsica, and ruled as far as Spain '. This is most surprising : for Roman historians are silent about this phantom fleet, trading with an already destroyed Carthage, and though the *Encyclopaedia Britannica* cites these places as the boundaries of the district of Etruria after the fifth century B.C. it does not mention a kingdom then, and indeed Miss Boyle herself seems to have thought better of it, for on page 85, after a long account of this

obscure people, she tells us that they were finally crushed by Rome in 283 B.C. This account occurs in the chapter on the *Bronze* Age, which is again remarkable, since on page 80 it is stated that ' the Etruscans worked in *iron*, bronze and copper '. Further, we read that ' at the height of her power Etruria included *almost the whole of modern Italy* in her kingdom, that she divided her territory into three districts, which divisions had a lasting effect on the country, as can be traced through the Middle Ages—down to the present day when Neapolitans are spoken of as foreigners by Florentines or Milanese '. This statement gives a remarkable importance to the Etruscans, and it is hard to see how these old arbitrary divisions can have withstood the unifying effects of centuries of Roman rule, the disintegration caused by the Barbarian conquests, and the rise of the City States and kingdoms of the Middle Ages and later. Another important omission from the bibliography is Mr Kendrick's book on the Druids, so we are not so very much surprised to learn first that though ' strangely little is known about the cult of the Druids ' yet this book contains many facts about the intimate details of their life and organization. These occur first in the chapter on La Tène III, and then in the chapter on the Neolithic Age. Here the author is dealing with megaliths, the alignments and dolmens of Brittany, etc. and tells us that ' It is quite probable that the Celtic people owed almost all the technical knowledge which they must have possessed to deal with such huge blocks of stone to this priesthood, whose schools were in Britain and Ireland, schools which remained practically undisturbed in these countries till they blended with the great abbeys of the Middle Ages '. Thus we can gather that the Celts, taught by the Druids, were responsible for all the stone monuments, and that the Druids held sway from Neolithic times until the Middle Ages. How they placated the Saxons, pagan or Christian, and withstood the Medieval Church, we are not told.

Further light is thrown on the origin of dolmens on page 83, where we read a description of Etruscan tombs, which ends thus :—' When the earth happens to be washed or worn away from the coverstones of these tumuli there is a striking resemblance between them and the cromlechs of Britain and Brittany ; the supporting stones on either side bearing up the coverstone form a dolmen, which may have inspired the ones with which Western Europe is so well acquainted '. Lake villages are well described in the course of the chapter on Neolithic times, but here again we lose all confidence in the writer when we read that ' Glastonbury is the principal lake-village known in England. Though it belongs strictly to the dawn of the Iron Age, in a district which had no copper period in equipment, it is similar to the Swiss settlements—indeed the Neolithic slipped so gradually into the Iron Age that it is often difficult to find the dividing line '. Glastonbury is usually ascribed to the end, not the beginning of the Iron Age, the brooches belong to the La Tène epoch, and though it is difficult to know exactly what is meant by Neolithic, yet in Somerset at any rate, there are very distinct traces of a Bronze Age intervening between megaliths and the Age of Iron.

Further quotations cannot be unduly multiplied, but mention must be made of ' a barrow on Silbury hill ' ; of the Magdalenian tools described as ' flint screwdrivers for leverage ' ; this may be the kitchen use of a screwdriver but it is hardly that of a carpenter, and it is hard to see what a people without screws wanted with screwdrivers ; of a tool ' called by the French a burin and the English a graver, and of which there are two types, one useful as a screwdriver and the other as a gouge.' Then why do we call it a graver ?

To get back to Aurignacian times. Miss Boyle tells us that in early Aurignacian days the lemming lived in the caves on the banks of the Danube, *and later* moved northwards.

they did so they must have met their close relations who had been in Jersey in Mousterian days. On the same page we find that ' the giant deer disappeared in Aurignacian times '. How then was it found in Ireland as late as the Neolithic period ? ' Mousterian man had quite modern teeth '. This is not quite the usual opinion, and again most authorities do not know of the beast called ' Hyperopithecus ', or that ' The American scientific expedition to the Gobi desert noted that camels made quantities of eoliths when on the march ' though here the error is chiefly of definition. Further, when we meet ' the existing tarsan ape of New Guinea ' we think that Miss Boyle has been reading contemporary fiction, and last, but not least, it is annoying to those people who spent part of their youth reading of muggers and trying to catch lizards to be told that ' We are accustomed to think of reptiles as having no feet '. Miss Boyle has undertaken a very great task with much courage ; she has succeeded in part, but before she brings out a second edition she should purge her book of its inaccuracies and errors.

DIANA PORTWAY DOBSON.

AIR-PHOTOGRAPHY AND ECONOMIC HISTORY ; the evolution of the cornfield. By E. CECIL CURWEN. *Published by the Economic History Society and to be obtained from The Students' Bookshop, Ltd., London School of Economics, Houghton St., Aldwych, W.C.* 2. 1928. 31 *pages.* 1*s.*

At first sight it may seem that there is very little in common between air-photography and economic history. Actually, we think, the connexion is a little forced, but that has not prevented Dr. Curwen from producing an admirable and most readable pamphlet. It may be said to have grown out of Dr. Curwen's article in ANTIQUITY (II, 168–72) but it should not be imagined that this pamphlet is merely a réchauffé of the article. The method of treatment is different, the whole subject of early agriculture is considered, and there are several additions and some valuable new conclusions. In particular Dr Curwen gives a representative list of sites where ancient fields, both Celtic and English, are to be seen.

A REPORT ON THE PUBLIC MUSEUMS OF THE BRITISH ISLES (other than the National Museums). By SIR HENRY MIERS, F.R.S., D.SC., to the Carnegie United Kingdom Trustees. *Edinburgh : printed by T. and A. Constable.* 1928. *pp.* IV, 213, *and* 8 *plates.*

The Carnegie Trustees are warmly to be commended in calling for a report on the provincial museums of the British Isles, on which Sir Henry Miers has concentrated his industrious research. It is a sufficiently disquieting document, as may be seen from the two following extracts.

> There is scarcely a general museum in the country that is really well arranged, well housed, provided with the necessary storage and work rooms, and adequately staffed. (Page 26).
>
> Most people in this country do not really care for museums, or believe in them. (Page 80).

The indictment is a two-edged one ; neither the museum nor the public for whose benefit the museum is maintained leave the court without a stain on their characters.

The Board of Education has constantly expressed pious opinions about museums as factors in education. Sir Henry Miers has done more than this ; he has himself visited something like 500 museums, and noted on the spot their good or bad points. When he

speaks therefore he is no mere theorist but one who doubtless has seen very dreadful things.

> In a certain museum—not by any means the worst—the following objects were all met in a single case, 12 inches by 24 inches: a Saxon brooch, a few feathers, several geological specimens, and a couple of fossils. By the fireplace were two beautifully-carved stair heads ; on the top of one reposed a Russian helmet and on the other a Roundhead casque. (Page 39).

Can we wonder with such things so prominently before his notice that Sir Henry Miers somewhat bitterly concludes :—

> In spite of certain noteworthy exceptions they fail—and fail lamentably. There is no doubt that the country is not getting what it should . . . and that most of them are not going the right way to supply what is wanted. (Page 38).

Having disposed of the past he looks forward to the future :—

> The present museum situation may not unjustly be summed up by saying that for several generations collectors and curators have devoted much labour to the making of museums, but that the time has now come for a new generation to consider how to use them. (Page 73).

No one will venture to dispute this conclusion ; but as museums differ so enormously in type, methods of upkeep, and general outlook, it is impossible to lay down any firm line of procedure. There must be constructive effort. No museum should exist which has not a full-time skilled curator, with assistance, workshop, and adequate remuneration. When these things have been achieved reforms can be looked for, but until then, very much contained in the report under review partakes of the nature of pious aspiration, and Sir Henry Miers is not ashamed to admit it.

> A great effort and a very large expenditure are required to set the whole service in order and to supply deficiencies. (Page 79).

We are driven therefore to the conclusion that the report deals with the ideal, but it gives us figures and facts which justify its conclusions.

Museums can be grouped into classes according to the manner of their upkeep and maintenance. There are 267 municipal museums on the rates. These are not all pure museums : some form an adjunct to the public library, others are linked to an art gallery, and yet others are unequally yoked to both library and art gallery. Can it be said that the museum gets fair treatment when run as a side line of a library, art gallery, or both ?

We learn from the report that the contents of municipal museums are not all that they should be. In many cases collections of any kind have been accepted because they were to be had for nothing ; and the committee could not resist the temptation of getting something for nothing, no matter what it was. After all what can be expected from Corporations, except the very large ones ? What sort of a committee can a Corporation assemble to manage a museum ? There are instances where outside members are co-opted, but the final word rests with the Corporation, and not with those who do the work. Rate-aided museums have to submit estimates, and are seldom allowed to make savings for emergencies. In this way they live from hand to mouth.

In the next category come the 'Society' museums, 76 in number. These are scientifically an important group ; they contain collections usually made locally by those who knew something of their subject, and are directed by qualified men. Such collections are the raw material for much important work. But these museums are in sore straits :—

> Those learned societies which maintain museums rarely have sufficient funds for the upkeep of their buildings and collections . . . and most of them have sought,

> or are prepared to seek, assistance from the rates. Over forty have given up the unequal struggle and have passed into the hands of municipalities. (Page 18).

After all the whole question of museums is bound to revolve round one pivot, the curator. Only a few of our museums have efficient curators. We find secretaries, headmasters, and park superintendents engaged in curatorial duties. There are part-time curators who put in a few hours weekly, and there are honorary curators who may be either busy men with other occupations or private individuals who loyally devote themselves to their work. Honorary curators are a great asset to a museum, but neither they nor the part-time curator can cope with the requirements of a modern museum.

> As a museum grows the principle of honorary or a part-time curator becomes more and more hopeless . . . Proper supervision and direction cannot be assured. (Page 49).

Finally comes the alarming statement that fifty museums have curators without any qualifications. Reviewing the position Sir Henry arrives at the following conclusion :—

> Only in a dozen or so [museums] is there a full-time competent curator with an adequate staff. (Page 22).

And what is the cost of our museums ? The total expenditure for the British Isles, including the great National collections, is £1,200,000. More than £450,000 is spent in the provinces. Whether the return in public service is adequate in view of the enormous amount of magnificent material they contain, remains to be considered.

But the report is not entirely destructive in its criticisms ; it contains much that is constructive and Sir Henry Miers sets himself to analyze the demands made upon the museum. As he sees the question, they come from :—(*a*) the man in the street ; (*b*) the schools, elementary and secondary ; (*c*) the student, and research worker.

The Man in the Street comes merely in the spirit of curiosity ; for him the museum should cater generously. His taste needs to be cultivated, and his investigations directed. The demand of the schools is educational and should be met by the museum staff directly ; or by a special teacher trained by the museum. Lastly comes the student, who as a rule is left to himself. The usual museum staff of one is already too fully occupied. This fact seems to be recognized by the Board of Education in its report on adult education (1927), where it is stated that ' No practical scheme has emerged for utilising museums in adult education '.

Like Mr Micawber the Board is ' waiting for something to turn up '.

As arsenals of research the museums of today are painfully crippled. The demand is urgent, the means are not forthcoming for rooms and fittings, with staff in charge. Indeed the complete answer to the entire report is contained in a single word—money.

At the moment we are told that the Carnegie Trustees are not entertaining the idea of grants to museums. Sir Henry Miers assures us that it cannot be a matter of Government grant ; where then is the money to come from ?

The report suggests that County Councils should provide for museums in England, and specially in rural areas. This is a little surprising after the plain words already used in dealing with the municipal museum. Is it supposed that any special virtue is inherent in the County Councillor, which does not exist in the Borough Councillor ? The problem would remain the same ; the managing body would still be an inexpert one, with co-opted specialists who would do the work, and be financially at the mercy of the Council. The suggestion bristles with difficulties : as to the town where the museum would be established, its staff, buildings, and maintenance grant.

However good or bad museums may be, they are the result mainly of private enterprise. Many have trust deeds which regulate their existence. If the County Authority were to take over existing museums they would require representation on the committees of management; it might want to dictate policy, or even alter the scope of the original foundation.

The report discusses the question of loan collections of museum specimens. There is much to be said in theory for this, but in practice difficulties present themselves. It is only right that no standard and figured museum piece should ever be allowed to leave its museum. Such fragile pieces as Bronze Age urns, porcelain, glass, and the like should never be submitted to the risk of continual movement. Much also is said of travelling museums for schools. The proposal is attractive, but each collection so sent out on its travels would be better with a skilled man in charge. Some stress is laid upon the importance of museum lectures of a popular nature. It is not so much the lecture as the type of lecturer that is important. The specialist only too often succeeds in wearying his audience. Good, popular lecturers on museum subjects are few, and need to be paid for their services.

What then is the situation today? The best provincial museums are the children of two or three generations of private collectors, The amount of good material so got together is undoubted but it needs careful and thorough investigation. Quite a number of museums are bringing their collections into a state of efficiency, but are hampered by lack of funds. Collectors nowadays sell their collections quite as often as they present them to the public.

Yet Sir Henry Miers says that 'the time has come for a new generation to consider how to use museums'. Example is better than precept; we do not want the new generation to consider how to use museums; we want them to put a little spade work into the vast mass of material that exists, to get down to the making of catalogues, and to relieve the overburdened curators. It would be pitifully easy for the new generation to break up existing collections, the work of years, but can it re-build them? There are plenty of men of the old generation in museums, unappreciated, without encouragement, who could reconstruct our museums if only they were given the opportunity and the means.

The report advocates the establishment of Agricultural and Health museums. Here is an excellent outlet for the new generation which is to reform our museums. It is a virgin field, and it would be interesting to see how the problems of establishing these museums would be faced.

But even Sir Henry Miers is not without his doubts, for he says :—'the foregoing proposals represent an ideal difficult of attainment' (page 80); and having said this he enunciates the bitter truth :—'Most people in this country do not really care for Museums or believe in them' (page 80).

Exactly! What is to be done then? Sir Henry suggests :—

(1) That towns with a population of over 20,000 should start museums. This means an extension in some measure of the 'Public library—Art gallery—Museum' system.

(2) That County Councils should do likewise in the counties.

(3) That external bodies should make grants for approved purposes: buildings, purchases and salaries.

The most illuminating comment on the last proposal is the statement by the Carnegie Trustees that 'applications for museum grants are not being entertained by them'.

The report is an invaluable document, because it shows what is wrong with the museums today. It is outspoken, and merits consideration. Will it receive the consideration it deserves ? And if it does will the committees concerned be in a position financially to do more than they are doing at present ? FRANK STEVENS.

FROM TRACKWAY TO TURNPIKE. By GILBERT SHELDON. *Oxford University Press.* 1928. *pp.* viii, 178, *with* 3 *maps.* 10*s* 6*d.*

Books on the subject of roads have a fascination for most people, possibly because even the most sedentary are would-be travellers. The earlier history of ancient roads is gleaned only by much field-work and careful archaeological study, while their later history, if they have continued in use, lies hidden for the most part in old diaries, letters and such-like records for those who will to ferret out for the benefit of others.

Mr Sheldon has attempted an intensive study of the roads of east Devon, and has produced an interesting book packed full of information for which he gives chapter and verse, but the number of pages of which can afford no inkling of the great amount of labour he has expended in obtaining his material. This book is, even when it treats of prehistoric roads, essentially a compilation of extracts which the author never fails to acknowledge. It is for this reason that the earlier chapters are not the best, for that portion is of necessity chiefly surmise ; the remainder consisting of contemporary and presumably accurate records.

When there are so few faults to find with a book, it is as well to mention them early. Mr Sheldon is apparently one of those who cherish the strange idea that there are two kinds of barrows—' sighting ' and sepulchral. But there is only one kind of barrow, and that is the sepulchral. No one speaks of ' sighting ' cemeteries or ' sighting ' hotels because they happen to be by the side of roads. The author suggests, on account of the terminations in the words Woodbury and Sidbury that those camps were occupied in Saxon times. This is most probably untrue, and the method of deduction is unsound, for the Saxons gave such names as ' Posses Hlaewe ' to barrows that certainly did not contain the remains of contemporaries.

But this is an excellent book and makes enjoyable reading. It treats of the rise of Exeter in Roman days when it was a frontier stronghold. The manufacture of cloth and its position on the higher reaches of a navigable river continued its importance. It was early a road centre. Later as a centre of industry it caused new roads to be focussed on it, and, after its eclipse as a centre of trade, these roads continued the prosperity of the city, now a great junction for traffic during the coaching days. The means and conditions of travelling from the earliest times to the end of the great coaching days are fully described with many interesting details. We can watch the growth of the roads at the hands of roadmakers who never looked ahead but made them sufficient only for the needs of the time. We can trace the influence of industry, the seaside habit, wars, the postal service, and competition between rival transport companies on the ways of communication. We can learn how the postmaster leaning out of his bedroom window ' in his nightcap exchanged bags with the guard by means of a hooked stick ', and how the ' Scrippy ' raced the ' Defiance ' from Exeter to London, covering the distance in thirteen hours, and how she ran over a flock of sheep in the process. If we want to learn all there is to learn about butterflies, cabriolets, curricles, gambadoes, post-chaises, sledges, trucamucks and stage-waggons, or the correct coin to give the guard, we can find it in this book. We hope Mr Sheldon will make a similar survey of other districts where the geological conditions are different and the evolution of roads took place along perhaps different lines. R. C. C. CLAY.

MAP OF ROMAN BRITAIN. Scale : 16 miles to one inch. *Published by the Ordnance Survey, Southampton. Second edition. 2s 6d ; in covers 4s on paper, 5s on linen.*

The second edition of this map is in many respects an improvement upon its excellent predecessor. From this it differs principally by the indication of aboriginal woodland (restored upon a geological basis); by the inclusion of almost the whole of Roman Scotland as an integral unit of the map instead of as a mere inset ; and by the insertion of sites of native villages known to have been occupied in the Roman period. In spite of these very considerable additions the new map retains the admirable clearness and simplicity of the old.

The restoration of natural woodland adds materially to the interest of the map. The general relationship of the Roman settlements to the physiographical features of the countryside is, of course, well-known, but is now for the first time illustrated on a comprehensive scale. The road-system, being built and maintained by a strong and wealthy administration, was rarely diverted by local obstacles except in mountainous regions ; but, away from the main roads, the Romanized farmer cared little more for the labour of clearing undergrowth than did his prehistoric forbears. Thus the forested areas of the midlands and, above all, the weald of Kent and Sussex are almost devoid of Roman ' villas ', whilst, at the other end of the social scale, the downs of Wiltshire continued to support the less Romanized native villages in their old environment, essentially unchanged by the Roman occupation. The importance of these native villages, is now, in consequence of Mr Crawford's discovery of their associated agricultural systems, more fully recognized, and they must henceforth claim a permanent place on the maps of Roman Britain.

Other points leap to the eye upon a map of this kind. Two examples will suffice. The Peddar's Way, which runs (to all appearances) blindly to the Norfolk coast on the eastern side of the Wash, missing the fort at Brancaster by about five miles, has long been something of a mystery. It now explains itself convincingly as an approach to a former ferry across the Wash ; it is picked up on the opposite shore of Lincolnshire by a road through Burgh-le-Marsh, and is in all respects comparable to the road-and-ferry system across the Severn between Sea-mills and Caerwent, or across the Humber at Brough. The Saxon-shore fort at Brancaster is not exceptional in displaying this independence of the earlier road-system. Like Bradwell and certain other forts of the series, it probably depended primarily upon sea-transport.

A second point is perhaps of wider significance. In the light even of so incomplete a restoration of the physiographical features as is possible on the small scale of this map, the solitary and rather mysterious transverse route known as the Fosse Way assumes a new meaning. It is well known that, amongst the arterial roads of Roman Britain, the Fosse alone has failed to retain its primary utility in post-Roman times. In some obscure way it belongs, therefore, to a scheme which, after the Roman period, became obsolete, and was indeed already ignored by the Antonine Itinerary. Such a fate is unusual for a great road, 140 miles long, if it was laid down by the far-sighted founders of our modern road-system. Mr R. G. Collingwood (*Journal of Roman Studies*, XIV, 252) put forward the ingenious theory that the Fosse originated as the temporary frontier-line drawn from Trent to Severn by the governor Ostorius in 46 A.D. This theory holds the field, but does not exclude a further suggestion. The present map shows clearly enough how the Fosse skirts the main forest-zone and, towards the north, climbs on to the ridges. It follows, in fact, a natural line of communication from the south-west to the north-east across the midlands. The point is at once emphasized and, I think, explained if the present map be

compared with that published in another context by Dr Cyril Fox (*Archaeologia Cambrensis*, 1927, fig. 1 facing p. 68, and see p. 96). There Dr Fox very acutely shows that through a great part of the La Tène period there is a well-defined culture-zone extending from Somerset and Gloucestershire to Northamptonshire, Lincoln and Yorkshire ; and that this line coincides geologically with a narrow Jurassic belt of well-drained sandy soil, suitable for habitation and traffic and extending from the limestone uplands around the head-waters of the Thames as far as the Humber. The line drawn by Dr Fox down the middle of his Jurassic belt is substantially equivalent to the line of the Fosse, save that the Fosse skirts what may be called the Leicester fringe of the central forest-zone, whereas Dr Fox's hypothetical line inclines to the Northampton side of it. The approximation of the two lines and the demonstrated cultural unity of the region thus traversed is at least an interesting coincidence ; and it raises in my mind a strong suspicion that the Fosse Way represents not merely a Roman frontier-line but also, like the Icknield Way, a route of pre-Roman origin. The same geological factors which may have determined the use of the line for prehistoric traffic would likewise help to determine its use (doubtless with local modification) as a temporary frontier during the north-westerly advance of the Roman invader. But they would thereafter cease to influence the plans of the Roman engineers, whose interest was focussed on the Lower Thames, and the career of the Fosse in a Roman guise was thus in any case predestined to be a brief one.

Relatively to the number of sites recorded, there is remarkably little in this map that calls for amendment, but one or two minor points might perhaps receive attention in the next edition. The symbols are on the whole clear and well-chosen. The least satisfactory is that for ' temporary fort ' (voided square), a doubtful term which seems here to be applied with varying significance. There are on the one hand forts of more or less permanent character which happen to have been occupied only for a short time. Such a one is Caer Mote, south-west of Old Carlisle. On the other hand, there are small temporary camps, the exact equivalent of those larger temporary camps which are clearly shown by a separate symbol (voided oblong). Several of the smaller earthworks along the border-road between the Wall and Newstead are of this type. The best solution is probably to mark forts such as Caer Mote with black squares, i.e. as forts, and to reserve the voided square for the ' small temporary camps ', retaining the voided oblong for ' large temporary camps '. Incidentally, at the risk of a little overcrowding, it might be well to indicate, at least generally, the presence of numerous temporary camps (large and small) along the line of Hadrian's Wall, particularly at Haltwhistle and Gilsland.

Milestones, if included at all, should be inserted more freely. For example, of twelve milestones in Wales, only one is shown on the map. I doubt, however, whether milestones add to the value of the map, and every unnecessary symbol removed increases the clearness of the remainder.

Caistor-on-the-Wolds and Horncastle in Lincolnshire certainly deserve promotion from mere ' village ' or ' evidence of occupation '. They are both fortified sites with massive stone walls and bastions—indeed, I am inclined to think that they are two more of the growing number of Saxon-shore forts. They are at least fortified towns. Reycross, between Bowes and Brough, is a ' large temporary marching camp ', and not (as shown) a ' temporary fort '. And what evidence is there for a fort at Workington, on the Cumberland coast ?

These are matters of detail. On its small scale, the map remains probably the best of its kind ever produced in any country. A final word to the buyer—the linen-backed edition is well worth the extra shilling charged. R. E. M. WHEELER.

ANTIQUITY

RHODESIAN MAN AND ASSOCIATED REMAINS. By WILLIAM PLANE PYCRAFT, G. ELLIOT SMITH, F.R.S., MACLEOD YEARSLEY, F.R.C.S., J. THORNTON CARTER, REGINALD A. SMITH, B.A., F.S.A., A. TINDELL HOPWOOD, M.SC., DOROTHEA M. A. BATE, and W. E. SWINTON, B.SC. With an Introduction by F. A. BATHER, M.A., D.SC., F.R.S. 1928. *London : the Trustees of the British Museum. pp.* xiv, 74 *with* 23 *text figures*, 5 *plates.* 12*s* 6*d.*

The long awaited official report on the remains of Rhodesian Man has been issued by the Trustees of the British Museum. The list of authors is impressive. The plates are excellent and the text drawings are beautifully executed. The report includes monographs or notes on the human remains, the endocranial cast, the pathology of the temporal bone, the teeth, the associated stone implements, and the animal bones found in the cave. No adequate geological report is included. No attempt has been made to articulate the *disjecta membra*. There are no general conclusions.

Mr William Plane Pycraft has evolved from the reconstruction of an innominate bone fragment the theory that Rhodesian Man walked with a stoop. The pelvic fragment in question may or may not have belonged to the owner of the skull. There is no proof of the association. A portion of a second innominate bone is assigned by Mr Pycraft to another individual of modern type. The author does not publish the reconstruction of the innominate bone upon which he bases his theory of the unusual posture of Rhodesian Man, at least not in this monograph. A small cut of the restoration may be found in a popular article in the *Illustrated London News*, 8 September 1928. Mr Pycraft thinks that the Rhodesian Man walked with legs wide apart at the knees, with the feet turned somewhat inward and the body bent forward. The reviewer does not believe that Rhodesian Man or any other kind of man ever walked in this fashion. He is wholly sceptical both of the correctness of the pelvic reconstruction and of the conclusions drawn therefrom. Mr Pycraft proposes a new genus for the specimen which he christens *Cyphanthropus* ('stooping man').

Professor G. Elliot Smith considers that the deficiencies in the prefrontal, upper parietal, and inferior temporal areas clearly differentiate the endocranial cast of Rhodesian Man from the Neanderthal type and justify the recognition of a new species of inferior rank. The capacity of the endocranial casts is only 1280 cubic centimetres.

Dr Macleod Yearsley discusses two perforations in the left temporal bone of Rhodesian Man. He thinks that the perforation of the squama was the result of a blow by a sharp instrument and that the hole in the mastoid process was due to suppurative middle ear disease complicated with mastoid abscess.

Mr Reginald A. Smith briefly describes the crude stone implements recovered from the cave at Broken Hill which yielded the skeletal remains of Rhodesian Man. One or two of the implements suggest or recall Mousterian types. Mr Smith wisely refrains from committing himself to an opinion as to the antiquity of these stone objects.

The entire question of the geological antiquity of this most important find and of the provenance of the various skeletal parts discovered is neglected in this official report. But the animal remains without exception seem to belong to existing species.

One ought to be able to venture a classical allusion in an English review devoted to archaeology. The monograph issued by the Trustees of the British Museum recalls the 'tag' beginning *Parturiunt montes* . . . E. A. HOOTON.

G R

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